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FOOD SCIENCE AND TECHNOLOGY ABSTRACTS

under the direction of

Commonwealth Agricultural Bureaux, Farnham Royal, Bucks; Gesellschaft für Information und Dokumentation, Frankfurt am Main; Institute of Food Technologists, Chicago; Centrum voor Landbouwpublikaties en Landbouwdocumentatie (Pudoc), Wageningen.

INTRODUCTION

Food Annotated Bibliographies (FABs) are collections of abstracts on specific topics in food science and technology. The topics are chosen by the staff of the International Food Information Service as being of particular interest or importance. The topics normally interest individual workers, who may not require the full information provided in Food Science and Technology Abstracts, from which the abstracts for FABs are taken. The size and the cost of the FABs are controlled as much as possible with the interests of individual workers in mind.

Titles of the FABs now available are given on the back cover of this booklet. For up-to-date lists of FABs or suggestions for new topics please write to the address on the back cover. New subjects are searched for at least the five most recent volumes of Food Science and Technology Abstracts. Thereafter each FAB is updated monthly. Copies of each month's abstracts on any topic may be obtained as indicated on the back cover of this publication. At the end of each volume of up-dating, the abstracts are merged and made available as a separate supplement to the original FAB.

Some of the larger FABs have been divided into sections to facilitate use. FAB 47 also has a subject and author index provided.

Copies of all original articles referred to in the abstracts may be bought (or occasionally borrowed) from the International Food Information Service. A form for ordering these is provided at the end of this FAB.

Coverage of the subject has been restricted to that of Food Science and Technology Abstracts, which covers over 1200 of the important food journals, patents from 20 countries and books published world-wide. Every effort is made to include all significant references, but editorial discretion is used on the many articles of borderline interest. If the reader particularly needs an exhaustive search of the subject, we will be pleased to provide any other references that we have available. We would, in any case, encourage readers to write or telephone us with any comments or queries that they may have.

H. BROOKES
EDITOR

1

The marketing man's approach to own labels.

Taylor, M. L.

IFST Proceedings 12 (2) 97-100 (1979) [En]

The economics of launching a retailer's own label in competition to brand labels are considered. Food products having sizeable own label shares of their markets are coffee (19.0% own label), carbonated drinks (12.3%), jams (43.8%), squashes (32.6%) and beans (32.8%). In general % own label share of market seems to increase with decreasing % of market value spent of advertizing. The only reason suggested for launching a new own label is to increase net profitability, having considered the market, competitors, potential suppliers, quality standards, pricing and profit justification. DIH

2

[Sensory testing of coffee.] Kaffee sensorisch geprüft. Ernst, U.

Tara 31 (356) 205-209; (357) 269-271 (1979) [3 ref. De]

A series of tests was carried out at the St. Gallen Research Station (Switzerland) for Jacobs Management & Consulting AG to determine the effect of packaging coffee in gas-permeable and gas-tight packages for varying storage times, on the sensory quality of the products. Coffee beans were packaged in conventional paper brick-shaped packs, while ground coffee (from the same roasting) was packaged in an Al/plastics laminate under vacuum, an Al/plastics pouch with N₂ flushing, or in a metal can with N₂ flushing. Storage was at 20°C/65% RH and at 40°C (accelerated ageing test). The test panel were ordinary members of the public, predominantly women. A detailed description of the panel test procedure is given. Results, given in tabular and graph form, showed that at 20°C (room temp.) the mean shelf life was 29 days for the beans (gas-permeable pack) and 27-28 wk for the ground coffee (gas-tight packs). At 40°C, the coffee aged about 3-4 × quicker than at 20°C, i.e. 100 days at 40°C corresponded to 300-400 days at 20°C (ground coffee samples tested). HBr

3

Extracts of vegetable material.

Risler, P.; Gireau, J.; Rose, P.; Bisson, J.-P. (Societe d'Assistance Technique pour Produits Nestle SA)

United States Patent 4 154 864 (1979) [En]

Water-soluble dehydrated grains of coffee, chicory, tea or herbal decoction are described which have a porous, cellular, internal structure encompassed by a smooth surface skin. IFT

4

Coffee extraction.

DEJ International Research Co. BV

UK Patent Application 2 005 126A (1979) [En]

A 2-step coffee extraction process is described in which the coffee is first subjected to aqueous countercurrent extraction, after which the grounds are subjected to extraction of the hydrophobic aromatic components. IFT

5

Enriched instant coffee.

General Foods Ltd.

British Patent 1 541 895 (1979) [En]

Process is described for production of an enriched instant coffee which involves preparing an aqueous extract of roast ground coffee, stripping a portion of the volatiles from the extract, combining the stripped volatiles with water-soluble coffee solids, drying the composition to form an enriched solid, drying the stripped extract, and finally blending. IFT

6

Stabilization of purified coffee oil.

Hamell, M.; Sims, R. J.; Feldman, J. R. (General Foods Corp.)

United States Patent 4 156 031 (1979) [En]

A coffee oil from which diterpene esters have been removed, is agitated with an aqueous coffee extract to effect transfer of natural coffee antioxidants from the extract to the oil, followed by separation of the phases. IFT

7

Process for the extraction of vegetable materials.

Clark, B. (Societe d'Assistance Technique pour Produits Nestle SA)

United States Patent 4 129 665 (1978) [En]

A process for extracting vegetable matter, specifically coffee, in liquid phase in a group of cells is described, in which 'hot cells' contain the most exhausted and 'cold cells' the least exhausted vegetable matter or fresh material. The extract is partially evaporated between the 'hot' and the 'cold' cells. SP

8

Spectrophotometric determination of caffeine in coffee products: collaborative study.

Newton, J. M.

Journal of the Association of Official Analytical Chemists 62 (4) 705-708 (1979) [15 ref. En] [FDA, 50 United Nations Plaza, San Francisco, California 94102, USA]

A UV spectrophotometric method for determining caffeine in regular and decaffeinated coffee products was studied collaboratively. Nine laboratories participated in this study which compared the proposed UV method with the official AOAC micro Bailey-Andrew method. Caffeine content was determined on as-is basis on 8 samples of green, roasted, and soluble coffees. The coeff. of variation for the proposed method ranged from 2.02 to 6.98% for the 8 samples studied. The results agreed well with those from the Bailey-Andrew method. The method was adopted as official first action. AS

9

Immunochemical investigation of food allergens.

Lehrer, S. B.; Karr, R. M.

Abstracts of Papers, American Chemical Society 177 (1) AGFD 11 (1979) [En] [Tulane Med. Cent., 1700 Perdido Street, New Orleans, Louisiana 70112, USA]

Prior to investigation of food allergies, the offending allergen must be identified. An example of allergen purification is the identification and fractionation of allergens causing occupational allergic disease in coffee workers exposed to dust associated with coffee manufacturing. 6 workers with occupational allergic symptoms demonstrated positive skin tests with green coffee bean and factory dust antigens. Their serum radioallergosorbent test (RAST) indices (a measurement of specific IgE antibodies) ranged from 3 to 15 for green coffee bean and 28 to 60 for castor bean allergens. 2 non-allergic workers and 5 control subjects did not react to the skin test allergens and demonstrated serum RAST indices < 2 . The serum IgE antibodies to coffee and castor allergens were used to develop an assay to detect allergens utilizing the RAST inhibition assay. Allergens were extracted from beans by homogenization in phosphate buffered saline. Extracts were centrifuged and supernates concentrated by ultrafiltration (Amicon UM 10). Green coffee bean allergens, fractionated by gel filtration and Pevikon block electrophoresis, were very heterogeneous. Castor allergens were more homogeneous and partially purified by Pevikon block electrophoresis and gel filtration. Using this approach, allergens present in peanuts are being isolated. AS

10

[Influence of packaging upon sensory quality of roasted coffee under different storage conditions.] Einfluss der Verpackung auf die sensorisch erfassbare Qualität von Röstkaffee unter verschiedenen Lagerbedingungen. Haevecker, U.

Chemie Mikrobiologie Technologie der Lebensmittel 6 (2) 33-35 (1979) [6 ref. De, en] [Tech. Fac., Berlin]

When roasted coffee beans were stored for up to 7 months in valve-bags, no significant loss of the "freshly-roasted" taste could be detected in sensory tests. This held equally true for ground coffee in vacuum-bags stored for up to 6 months. Prerequisite for these results was that the O_2 content in the pack was $< 0.5\%$ by vol. After admission of air (accidental or deliberate) the "freshly-roasted" flavour started to diminish after 10-11 days. In presence of air both types of pack showed the same characteristic flavour losses. These occurred twice as fast in ground coffee as in beans. Retention of freshness in an unopened traditional flexible bag is dependent on the quality of the packaging materials and of the seams. Loss of freshness, which begins immediately after packaging, is a compromise between 2 opposing factors: possibility of de-gassing vs. retention of flavour; at best, flavour losses are retarded. The relatively new valve-bag offers one possibility of retaining the flavour of freshly roasted coffee. AS

11

[Warm water-soluble instant drinks containing gelatin.] Warmwasserlösliche Getränkepulvermischung zur Herstellung von gelatinehaltigen Getränken. Menrath KG

German Federal Republic Patent Application

2 807 208 (1979) [De]

Dietetic drinks comprise instant soup, coffee, cocoa or fruit juice to which has been added sufficient finely powdered gelatin (60 mesh) to give 2-5 g (preferably 3 g) gelatin in 125 cm³ beverage. The dry powder components may be vacuum packaged. W&Co

12

[Automation. Application of process control computers in the food industry.] Automation. Prozessrechnereinsatz in der Lebensmittelindustrie. Scholz, W.

Süßwaren 23 (5) 30-33 (1979) [De] [Probst-Werke, Gimborn GmbH & Co. KG, 4240 Emmerich 1, Federal Republic of Germany]

Application of a process control computer in a coffee roasting plant is discussed. The computer system records the quantity and type of coffee beans in primary storage silos, and silos in the roasting facilities, controls blending of ≤ 10 coffee types according to 10 programmes, for transfer to the roaster, and calculates the roasted coffee batch size and raw coffee/roast coffee wt. ratio. Data on plant performance and yield are also recorded and processed. IN

13

Beverage brewer.

Chupurdy, G. C.

United States Patent 4 167 136 (1979) [En]

A coffee brewer, in particular a single cup coffee brewer, has a 1st member seated on the cup and incorporates a ground coffee-receiving chamber, and a 2nd member to regulate the flow of hot water into the chamber. HBr

14

Disposable unitary coffee maker.

McCormick, J. B.

United States Patent 4 167 899 (1979) [En]

A disposable unitary coffee maker has similarly shaped top and bottom portions with annular flanges in fluid-tight relation with an interposed pump element. The pump element encloses a coffee charge through which purified water from the bottom portion passes when heated. HBr

15

[Determination of levels of inorganic Br residues in green coffee as a result of fumigation with methyl bromide.]

Jordao, B. A.; Yokomizo, Y.; Sartori, M. R.; Moraes, R. M. de; Carvalho, G. R.; Medina, J. C.

Boletim do Instituto de Tecnologia de Alimentos, Brazil No. 60, 41-59 (1978) [7 ref. Pt, en] [Inst. de Tecnologia de Alimentos, Campinas, Sao Paulo, Brazil]

Studies were conducted on the use of methyl bromide (MB) for control of the insect *Araecerus fasciculatus* in green coffee, and subsequent residue concn. in the coffee. MB doses of 12, 14, 16, 18, 20, 22.5, 25, 30 and 35 g/m³ were used, with a fumigation time of 24 h, fumigation being repeated (at the same dose) after 30 days. The coffee samples under test contained caged *A. fasciculatus* at various stages of the life cycle. Tables

of results are given, showing lethality of the fumigation treatment, and residual bromide concn. An adult insect death rate of 100% can be achieved by a single fumigation with 12 mg MB/m³. Residue concn. increased with increasing MB dose, i.e. from 6.1 p.p.m. for 12 mg/m³ to 19.6 p.p.m. for 35 mg/m³ for the first fumigation, from 19.0 to 60.8 p.p.m. resp. for the second fumigation. Non-fumigated green coffee was found to contain 12.2–16.1 p.p.m. bromide. The max. tolerance for inorganic Br residues was exceeded only by the sample fumigated twice at 35 mg/m³. AJDW

16

[Monitoring keeping quality status of roast coffee by volatile sulphur compounds.]

Noomen, P. J.

Chemie Mikrobiologie Technologie der Lebensmittel 6 (2) 48–51 (1979) [9 ref. En, de] [DE] Int. Res. Co. BV, Utrecht, Netherlands]

A combination of a concentrating headspace technique, a packed column gas chromatographic system with a pre-column injection facility and a specific flame photometric detector for sulphur-containing compounds is used for monitoring the ageing of roast coffee. A correlation is presented between the ratio of 2 peak areas in the chromatograms and the organoleptic assessment of coffee samples of different ageing status. An individual correlation appears to exist for each type of coffee. The method of analysis allows monitoring of the influence of e.g. packing material and temp. on the ageing process of roast coffee. It is intended as a support to expert quality assessments. AS

17

[Behaviour of some minor volatile aroma components during coffee staling.] Verhalten einiger schwererflüchtiger Aromastoffe während der Alterung von Röstkaffee.

Tresel, R.; Grünewald, K. G.; Kamperschröer, H.; Silwar, R.

Chemie Mikrobiologie Technologie der Lebensmittel 6 (2) 52–57 (1979) [11 ref. De, en] [Lehrstuhl für Chemisch-Tech. Analyse, Univ., Berlin]

Freshly roasted coffee beans were stored at 25°C in packages with access of air. By means of a special separation process involving enrichment by distillation-extraction, adsorption chromatography, capillary gas chromatography (GC), capillary-GC-MS minor volatile aroma components have been identified and quantified during coffee staling. We investigated the behaviour of 3 furfurylpyrroles, which possess typical aroma notes, and other N-substituted pyrroles, formed by Maillard reaction from hydroxyproline. We also investigated several phenols, especially 4-vinylguaiacol, as well as C-substituted pyrroles. Of the S-containing trace compounds, furfurylmethylsulphide, to which the "coffee-like" aroma is attributed, remained constant. On the other hand, furfurylmercaptan and the analogous 5-methylfurfurylmercaptan, identified for the first time in coffee, increased greatly after only a few days. Furfurylmercaptan possessed the pleasant aroma of freshly brewed coffee in amounts of 0.01–1 parts/billion (p.p.b.) in water but was mercaptan-like and sulphurous in amounts of 5–10 p.p.b. AS

18

Coffee extraction.

Wouda, H. A. J. (DEJ International Research Co. BV) *United States Patent* 4 158 067 (1979) [En]

Extracts are prepared from ground roasted coffee by exhaustive extraction of the solubles (without substantial hydrolysis of the solids); heating to transform the insoluble solids into extractables; and exhaustive leaching. HBr

19

Process for treating an aqueous extract of a vegetable material.

Farr, D. R.; Horman, I.

United States Patent 4 160 042 (1979) [En]

To reduce its caffeine and/or chlorogenic acid content, coffee is treated with a solid ligneous adsorbent, preferably carob pods. Adsorption is preferably at ≤ 30°C. HBr

20

[Investigation and processing of processed raw and roasted coffees.] Zur Untersuchung und Beurteilung bearbeiteter Roh- und Röstkaffees. [Lecture] Wurziger, J.

Lebensmittelchemie und Gerichtliche Chemie 33 (4) 83–84 (1979) [De] [Bredkamp 43a, 2000 Hamburg, Federal Republic of Germany]

Methods for processing of coffee beans to reduce their content of irritant factors (coffee waxes, chlorogenic acid, feruloylquinic acids, carboxylic acid-5-(hydroxy)-tryptamides) are briefly considered, together with legal definition of coffee with a reduced level of irritants, and procedures for testing whether coffee has been subjected to irritant-removal process (e.g. detn. of the concn. of the above irritant factors, the coffee oil concn., or the kahweol colour reaction). (See FSTA (1980) 12 2A54.) AJDW

21

Flavor improvement.

Ohno, A. (Gallon & Co.)

United States Patent 4 161 549 (1979) [En]

A process is described for improving the flavour of previously dried green coffee beans in which they are tempered under defined conditions of pressure, temp. and humidity, together with sufficient circulation of air to purge undesirable constituents. IFT

22

Coffee extraction.

Societe des Produits Nestle SA

British Patent 1 547 242 (1979) [En]

Process is described for extracting solubles from roast ground coffee in which the coffee is first wet with an aqueous coffee brew before extraction. IFT

23

Extracting caffeine.

DEJ International Research Co. BV

UK Patent Application 2 008 921A (1979) [En]

Process is described in which caffeine is removed from CO₂ extracts by contact with a hydrophilic resin

absorbent capable of being regenerated with water. The caffeine laden CO₂ solution is obtained by extracting wet green coffee or an aqueous extract of green coffee with CO₂ or by mixing green coffee beans with the absorbent and passing CO₂ therethrough. SP

24

[Method for removal of caffeine from coffee.]

Verfahren zur Entcaffeinierung von Kaffee.

Zosel, K. (Studiengesellschaft Kohle mbH)

German Federal Republic Patent Application

2 905 078 (1979) [De]

Decaffeination of coffee is effected by countercurrent passage of CO₂ through an aqueous extract containing 20–40% coffee solids at 75–350 atm and 35–140°C. 98% caffeine removal takes <30 min. CO₂ is recovered by release of pressure, and solid coffee extract by water removal. W&Co

25

[Preservation, changes and evaluation of the aroma of roasted coffee.] Aromaerhaltung,

Aromaveränderungen und Aromabeurteilung bei Röstkaffee. [Conference proceedings]

Germany, Federal Republic of, Institut für

Lebensmitteltechnologie & Verpackung

Chemie Mikrobiologie Technologie der Lebensmittel

6 (1) 11–32 (1979) [De, en]

Four papers from this symposium, held in Munich on November 9 and 10, 1978, are abstracted separately and can be found in the author index under **Germany, Federal Republic of**, Institut für Lebensmitteltechnologie & Verpackung [Coffee Aroma Symposium]. HBr

26

Effect of mobile phase composition on the partition of phenolic acids in reversed-phase TLC and HPLC. Grodzinska-Zachwieja, Z.; Bieganska, M.; Dzido, T. *Chromatographia* 12 (8) 555–558 (1979) [22 ref. En] [School of Med., Krakow, Poland]

Phenolic acid derivatives of cinnamic acids, which attract wide interest in relation to coffee and the darkening of fruits, were investigated by reversed phase TLC using silica gel silanised or impregnated with paraffin oil in saturated and sandwich tanks, and by HPLC using Li Chrosorb RP-2 as adsorbent. The R_m vs. % H₂O relationships were linear in a wide concn. range. The results show that it is possible to correlate results of TLC in sandwich tanks with those of HPLC. The chromatographic parameters of the compounds investigated are interpreted in terms of their chemical structure. AS

27

[Plastics containers for UHT products: 'bottle-pack-aseptic-system'.] Kunststoffbehälter für UHT-Produkte: 'bottle-pack-aseptic-system'.

Anon.

Molkereitechnik 43 73–75 (1979) [De]

The containers (polyethylene) are made by a blow-moulding process and are filled immediately whilst still

sterile. The packaging plant can be supplied direct from the UHT installation or via a sterile tank; for capacities of up to 1000 l/h the company supplies their own indirect UHT sterilizer with an integrated cleaning system. The smallest packages are tubes with 7.5 or 15 ml coffee cream. Further package sizes are 200–250 ml for school milk, 0.5 and 1.0 l bottles, and finally 5 and 10 l containers (for catering establishments, schools, bakeries, confectionery shops). FL

28

[Sensory evaluation of coffee quality in relation to storage time in various packages.] Sensorische

Beurteilung der Kaffequalität in verschiedenen Verpackungen in Abhängigkeit der Lagerdauer.

[Lecture]

Ernst, U.

Chemie Mikrobiologie Technologie der Lebensmittel

6 (1) 18–24 (1979) [De, en] [Eidg. Materialprüfungs- & Versuchsanstalt für Ind., Bauwesen & Gewerbe, St. Gallen, Austria]

Quality assessment by a group of 'ordinary' people was studied in relation to coffee beans in (i) paper bags and ground coffees in (ii) vacuum packaged laminated Al-plastics, (iii) extruded Al-plastics, gas packed and (iv) a gas-packed metal can, with storage for 300 days at 20°C/65% RH or 40°C/20% RH. Results are presented in tables and graphs. Preliminary triangle tests vs. fresh reference samples are recommended, with further procedures when a panel is unable to record clear differences. Care is needed to distinguish between 'fresh', 'stale', and 'spoiled' and between 'not good' and 'different'. Quality changes were 6–7 × slower for (ii), (iii), (iv) than for (i), e.g. 6–7 months vs. 30 days. Temp. increase from 20° to 40°C gave 3–4 × rate of change (useful for rapid sorting tests). Permissible safe storage time at 20°C was 6 wk for (i) and 41–42 wk for (ii), (iii) and (iv); quality retention was reduced at >300 days, and longer storage times required reduced temp. After opening, a 'kitchen life' of 10 days can be allowed. Quality retention differed very little between (ii), (iii) and (iv); at higher storage temp. (ii) could be slightly superior and also had the advantage of easy leak detection by 'softening' of the package vs. complex procedures for (iii) and (iv). Essentially the choice of package can depend on production and marketing criteria [See FSTA (1980) 12 3A121.] ELC

29

Keeping coffee fresh.

Anon.

Tea and Coffee Trade Journal 151 (9) 61 (1979) [En]

A Rose Forgrove RF 250N Flowpak machine that automatically combines and carries out packaging and N₂ gas flushing allows reduction of material and labour costs in the manufacture of immersible coffee bags. The machine permits control of residual O₂ at <1%, very effective sealing, seal cooling (to prevent seal separation), and control of N₂ gas flow (activated by starting and stopping the machine). RM

30

[Extension of the storage life of foods by protective gas packaging. The Aroma-Perm system for gas-packaging in layflat film bags.]

Haltbarkeitsverlängerung von Lebensmitteln durch Schutzgas. Begasungssystem "Aroma-Perm" für Schlauchbeutel.

Anon.

Verpackungs-Rundschau 30 (4) 412-414 (1979) [De]

Packaging under a protective gas atm is appreciably cheaper than vacuum packaging, and gives an approx. equal shelf-life. The Aroma-Perm process is suitable for inert gas packaging of products in layflat film bags. The vertically-operating electronically-controlled VP 260-NC packaging machine is suitable for protective gas packaging of free-flowing materials such as ground coffee, dried soups, grated cheese and dried milk; the horizontally-operating DPP packaging machine is suitable for packaging of chocolate, bakery products etc. The Aroma-Perm process permits reduction of the residual O₂ concn. in the pack to 0.1-1.0%; protective gas consumption is low. The application of the Aroma-Perm system to packaging of coffee in an N₂ or CO₂ atm is described; throughput is 28-55 packs/min, and a storage life of 6-8 wk may be achieved. IN

31

Economic importance of *Ceratitis capitata* in Kenya.

Waikwa, J. W.

Kenya Coffee 44 (516) 7-11 (1979) [21 ref. En] [Coffee Res. Sta., Ruiru, Kenya]

The effect of *C. capitata* infestation on premature coffee berry drop and on development of stinker beans was investigated. When ovipunctured berries were processed, no stinker beans were detected either by liquorers or by UV light. Bacteriological examination of fermenting infested coffee beans revealed the presence of coliforms and *Pseudomonas* types. RM

32

[Measurement of the 2-methylfuran/2-butanone quotient of unground coffee during storage out of contact with air.] Messung des Quotienten 2-Methylfuran/2-Butanon von ungemahlenem Röstkaffee während der Lagerung unter Luftausschluss.

Arackal, T.; Lehmann, G.

Chemie Mikrobiologie Technologie der Lebensmittel 6 (2) 43-47 (1979) [2 ref. De, en] [Fachbereich 15 Analytische & Biol. Chem., Univ. des Saarlandes, Saarbrücken, Federal Republic of Germany]

The effectiveness of valve-packaging of freshly ground coffee was evaluated by means of GLC analysis of the headspace gases at intervals before and after breaking the seal. From the resulting chromatograms an aroma index was calculated in terms of the ratio of the peak areas for 2-methylfuran and 2-butanone. A linear decrease in the aroma index with time was observed following opening of the packs, allowing ingress of O₂, while the index remained constant as long as the pack remained unopened. It is concluded that the method provides an effective indication of the freshness of stored, ground coffee, and of its rate of deterioration under domestic conditions. BDH

33

Low density coffee roasting process.

Hubbard, M. H.; Phipps, R. R.; Thompson, R. L. (Hills Bros. Coffee Inc.)

United States Patent 4 169 164 (1979) [En]

Green coffee beans are dry roasted by passage in a fluidized bed through a 2-stage roaster. In the 1st stage the beans are partially roasted, and in the 2nd zone they are contacted with another gas stream at 515-545°F. The product is of low density. HBr

34

Process of extracting stimulants from coffee.

Roselius, L.; Kurzhals, H.-A.; Sylla, K. F.; Hubert, P. (HAG AG)

United States Patent 4 168 324 (1979) [En]

A method of producing coffee low in undesired stimulants involves removing coffee wax from unroasted coffee by the use of a supercritical fluid, specifically CO₂ above its critical temp. and pressure, and absorbing the coffee wax in an absorbent precharged with pure caffeine. AS

35

Apparatus for improving coffee grounds usage.

Wolfer, R. C.

United States Patent 4 168 656 (1979) [En]

A coffee percolator for improving ground coffee usage is described. HBr

36

[Gas-fluidized bed roasting of coffee.]

Arjona, J. L.; Rios, G. M.; Gibert, H.; Vincent, J.-C.

Cafe-Cacao-The 23 (2) 119-128 (1979) [8 ref. Fr, de, en, es] [Lab. du genie alimentaire, Univ. des Sci. et Tech. du Languedoc, Place E. Bataillon 34060 Montpellier Cedex, France]

A new coffee roasting plant was studied on pilot plant scale, in which coffee beans are not directly suspended in a stream of hot air but plunged into a fluidized bed of fine inert particles and heated at the appropriate temp. This method allows very short roasting (3-5 min) at 220-240°C inlet gas temp. Recycling of gas allows energy savings and recovery of aroma compounds. The min. air speed for good hot air circulation depends on the amount of coffee and the size of the fines. Trials with Arabica and Robusta coffee showed that the products are completely acceptable, the physico-chemical and sensory properties being equal or superior to conventionally treated products. Specifications of the equipment, operating conditions and the nature of the particles introduced into the system were investigated. [See also FSTA (1978) 10 5H695.] [From En summ.] RM

37

[Measurement of aroma losses by coffee beans in oxygen-permeable packages.] Messbare Aromaveränderungen bei Bohnenkaffee in sauerstoffdurchlässiger Verpackung. [Lecture]

Vitzthum, O. G.; Werkhoff, P.

Chemie Mikrobiologie Technologie der Lebensmittel

6 (1) 25-30 (1979) [8 ref. De, en] [Wissenschaftliche Abteilung der HAG AG, Bremen, Federal Republic of Germany]

Profiles of volatile aroma compounds in roast coffee were determined by chromatography (methods given); 14 of these were found to change in coffee stored in contact with air. A valuable aroma index was supplied by the quotient 2-methylfuran/2-butanone (MB); during 10 wk storage at 20°C this showed a linear change and good correlation with sensory panel results. Another useful index was methanol/2-methylfuran (MM). With air contact ground coffee lost aroma 5-10 × faster than whole beans, but could be stored with little change for 6 months if vacuum packed (< 0.3% O₂); after opening the package the aroma deteriorated. Other measurements are given of changes in aroma intensity in the headspace gases of closed containers, covering 41 compounds plus 10 S compounds, with % loss for 14 major components. Fresh roast coffee held for 12 days at room temp. lost 63% of aroma, but only 1% at -20°C. An interval of ≤ 3 h max. between grinding and vacuum packing had no adverse effect on aroma. [See also following abstr.] [See FSTA (1980) 12 3A121.] ELC

38

[Relation of the MB aroma index of roasted coffee to various parameters.] Abhängigkeit der Aromaindex-Kennzahl M/B von verschiedenen Parametern. [Lecture]

Kwasny, H.; Werkhoff, P.

Chemie Mikrobiologie Technologie der Lebensmittel 6 (1) 31-32 (1979) [5 ref. De, en] [Wissenschaftliche Abteilung der HAG AG, Bremen, Federal Republic of Germany]

Application of the MB aroma index [see preceding abstr.] was further studied for measurement of freshness of roasted coffee. Fresh roast arabica coffee was ground to 2 extremes of comminution i.e. grain sizes 0.5 mm (fine ground) and 0.85 mm (coarse); MB index was determined by gas chromatography for each grade on the 3 following days. Milling grade had a distinct effect on the MB index, hence standardization of milling is essential. Coffee was roasted to 8 different degrees of burning and examined by the colour, 'roasting number' (trigonellin/niacin) and MB index. Results are shown in graphs. After 2-5 days the MB index showed good correlation with colour, but was less good after 10 wk when colour change was insignificant. MB differences became very strong with degree of roasting; dark roast coffee alters rapidly vs. lightly roasted coffee and the difference correlates well with sensory tests. MB and colour measurements are presented in curves for 4 coffees of different origins and a hyperbolic function for MB/colour is given. It is concluded that MB values are good for known, defined coffee blends and for evaluation of freshness retention by trade packages, but are unsuitable for absolute measurement of degree of freshness of unknown coffees. [See FSTA (1980) 12 3A121.] ELC

39

Analysis of caffeine and trigonelline using high-performance liquid chromatography.

Duijn, J. van; Stegen, G. H. D. van der
Journal of Chromatography 179 (1) 199-204 (1979) [11 ref. En] [DE] Int. Res. Co. BV, Keulsekade 143, PO Box 2, 3532 AA Utrecht, Netherlands]

The HPLC method reported is suitable for routine analysis of caffeine (CF) and trigonelline (TG) in regular and caffeine-free samples of coffee and tea. Coffee and tea samples were extracted with, and instant coffee dissolved in, demineralized water to give concn. of CF and TG in the range 3-500 mg/l. Solutions were applied to a column containing Dowex 1-X4 anion exchanger, the column was eluted with demineralized water and the effluent made up to 25.0 ml, aliquots of these effluents were filtered over a Millipore filter and filtrate injected into the chromatograph (Partisil 10 SCX column). For chromatographic separation, CF, TG, theobromine and an unidentified peak found in roasted coffee samples were taken into consideration. Parameters investigated were salt concn., pH and methanol content of the eluent. The preferred eluent was an aqueous solution of 15mm potassium citrate, pH 3.0 and 10% (v/v) methanol. For CF, linear detector responses (at 280 nm) were obtained for injected amounts up to 500 ng. Analysing 6 samples of roasted coffee and using external standards, relative s.d. were 1.7% for CF and 3.6% for TG; recovery was > 99.7% for both. AL

40

[The sterol fraction of coffee oil (*Coffea arabica* L.).]
Tiscornia, E.; Centi-Grossi, M.; Tassi-Micco, C.; Evangelisti, F.

Rivista Italiana delle Sostanze Grasse 56 (8) 283-292 (1979) [36 ref. It, en] [Univ. di Genova, Genoa, Italy]

The sterol composition of 20 samples of coffee seed oils from various origins, prepared by hexane extraction, was determined by GLC analysis of trimethyl silyl derivatives on a polar stationary phase (OV 17). The structural formulae of 23 unsaponifiables identified in coffee oil (pentacyclic diterpenes, triterpene hydrocarbons and alcohols, 4 α -methyl sterols, and sterols including Δ^5 and Δ^7 sterols) are shown. Tabulated results from the 20 samples show the main components of the sterol fraction to be sitosterol (45.4-56.5%), stigmasterol (19.6-24.5%) and campesterol (14.8-18.7%), with smaller amounts of cholesterol (traces, i.e. < 0.2% to 0.6%), Δ^3 and Δ^7 -avenasterol (1.9-14.6% and traces-4.4% resp.) and Δ^7 -stigmasterol (0.6-6.6%). RM

41

Methods of test for coffee and coffee products.

1. Green coffee - determination of moisture content. (Basic reference method).

United Kingdom, British Standards Institution
British Standard BS 5752:Part 1, 5pp. ISBN 0-580-10909-7 (1979) [En] [2 Park Street, London W1A 2BS,

UK]

This standard is identical with ISO 1446-1978 [see FSTA (1978) 10 8U728].

42

New bin unloader reduces loss of soluble powder.
Lee, S.

Tea and Coffee Trade Journal 151 (5), 6, 12 (1979) [En]

A new unloader for discharging instant coffee powder from bulk bins is described which converts any portable bin to a "Live Bin" during the discharge cycle. It consists of a steel frame and platform equipped with a vibrating gyrator and an appropriate discharge outlet. The entire platform, bin and bin contents quietly vibrate to keep the material mobile and free flowing. In 1 test, 80 ft³ soluble coffee were transferred from bin to package in 1½ min. Side outlet bins are handled and discharged as easily as bottom outlet bins without a separate tilt mechanism. RM

43

[Chemical studies on coffee quality. VI. Changes in the organic acids and pH of roast coffee.]

Nakabayashi, T.

Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 25 (3) 142-146 (1978) [8 ref. Ja, en] [Fac. of Agric., Shizuoka Univ., Ohya, Shizuoka-shi, Japan]

Correlation between production of non-phenolic organic acids and changes in pH of coffee during roasting was studied. Using gas chromatography, 10 acids (formic, acetic, lactic, glycolic, levulinic, oxalic, malonic, succinic, malic and citric) were identified. Contents of formic and acetic acids increased markedly during medium roasting and then decreased during further roasting. pH of a coffee infusion fell on medium roasting and then began to rise. The amount of free acids paralleled the changes in pH, but the amount of total acids separated out by treatment with cation-exchange resin increased with 'Italian' roasting. The dark brown pigment and porous structure of roast coffee beans appeared able to adsorb high quantities of acids. It was therefore concluded that this adsorption causes the decrease in free acids and the rise in pH. AS

44

[Chemical studies on coffee quality. VII. Formation of organic acids from sucrose by roasting.]

Nakabayashi, T.

Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi] 25 (5) 257-261 (1978) [12 ref. Ja, en] [Fac. of Agric., Shizuoka Univ., Ohya, Shizuoka-shi, Japan]

During coffee roasting, many nonphenolic acids were produced and it was postulated that the precursor of these acids was carbohydrate, mainly sucrose. To verify this theory, sucrose and a chlorogenic acid/sucrose mixture were roasted at 190°C for 20-23 min and the acids produced were analysed by gas chromatography. Formic, acetic, lactic, glycolic, levulinic, oxalic, malonic and succinic acids were produced from sucrose; the same acids were also detected from the mixture with

chlorogenic acid. Quantitative changes in these acids during roasting were determined. The monosaccharides produced the same acids; the polysaccharides, such as arabinogalactan and cellulose, produced citric acid in addition to formic, acetic, oxalic, malonic and succinic acids. [See preceding abstr. for part VI]. AS

45

Heating device for a percolator and method of using the same.

Fajans, J.

United States Patent 4 170 931 (1979) [En]

Better coffee is made in a conventional percolator when the percolator is heated on a metal heating plate having a planar top surface and a locating recess centred in the surface. HBr

46

Beverage preparing apparatus.

Roseberry, H. R.

United States Patent 4 172 413 (1979) [En]

The apparatus consists of a hopper for coffee beans and a grinder, the motor of which is adjustable to provide the exact amount of ground coffee for the amount of water to be used. HBr

47

[Method for manufacture of additive for coffee.]

Roef, W. C.; Kramer, W. N.

Netherlands Patent Application 7 707 545 (1979) [NI]

An additive for coffee is made out of chicory by a novel procedure in which waste chicory is remoistened with water, redried in an oven, and finally ground. This procedure produces a product that may be added to coffee at up to 40-60% by wt. without altering the taste of the coffee. W&Co

48

[Method for extraction of caffeine from raw coffee beans.]

DEJ International Research Co. BV

Netherlands Patent Application 7 807 208 (1979) [NI]

Extraction of caffeine from raw coffee beans with an aqueous liquid and treatment of the resultant extract with a synthetic polymeric resin which preferentially absorbs caffeine are described. The synthetic resin used is of the type obtained by polymerization or copolymerization of aromatic chain-systems and monomers containing acid groups, and from which the ratio of total absorption capacity of caffeine to total ion-exchange capacity is > 1 but < 25, preferably 5-15:1. W&Co

49

[Method for selective extraction of a soluble component from granular material containing soluble components.]

DEJ International Research Co. BV

Netherlands Patent Application 7 807 214 (1979) [NI]

The granular material, specifically coffee, is subjected to continuous liquid extraction, and is then passed several times through a granular material which absorbs caffeine preferentially (e.g. Duolite S 761, made by Duaprosim Benelux). [See also preceding abstr.] W&Co

50

[Aroma assessment of roast coffee.] Zur Aromabeurteilung bei Röstkaffee. Wurziger, J.

Chemie Mikrobiologie Technologie der Lebensmittel 6 (2) 58-63 (1979) [De] [Bredkamp 43a, D-2000 Hamburg 55, Federal Republic of Germany]

A series of experiments is described in which raw or roasted coffee beans of different origin and also aqueous coffee extracts were steam-distilled and the distillate extracted with petrol ether or other solvents. When the extract was treated with ammonia or ammonium carbonate various colour reactions were observed which could be related to the preliminary treatment, although they did not enable a distinction to be made between Arabica and Robusta beans. The significance of these changes is discussed in relation to the known chemical constituents (e.g. chlorogenic acids) and also to the development of quality control measures for processed coffee, although no clear recommendations are presented. BDH

51

Evaluation of the teratogenic potential of fresh-brewed coffee and caffeine in the rat.

Palm, P. E.; Arnold, E. P.; Rachwall, P. C.; Leyczek, J. C.; Teague, K. W.; Kensler, C. J.

Toxicology and Applied Pharmacology 44 (1) 1-16 (1978) [31 ref. En] [Life Sci. Div., Arthur D. Little Inc., Cambridge, Massachusetts 02140, USA]

The aim of the study was to assess the teratogenic potential of coffee and caffeine in rats by presentation of fresh-brewed coffee for ad lib. consumption prior to and throughout gestation. For comparison, caffeine dissolved in water was administered to 2 other groups of rats; a third group received aspirin (a proven teratogen) and served as a positive control. Dilutions of fresh-brewed coffee (containing 12.5, 25 and 50% coffee and resulting in caffeine intakes of approx. 9, 19 and 39 mg/kg/day, resp.) were consumed by female rats as their sole beverage for 5 wk prior to mating, throughout gestation and, in some animals, until 27 days after parturition. Other rats received a daily dose of 30 mg/kg of caffeine or 125 mg/kg of aspirin by intubation, or 30 mg/kg of caffeine in water. None of the above treatments interfered with normal behaviour, growth, eating or drinking patterns, or reproductive performance. No dose-related teratogenic effects were observed with coffee or caffeine-in-water treatment. All treatments resulted in an apparent slight delay in ossification in foetuses, while the 25 and 50% coffee, caffeine-in-water and aspirin treatments resulted in some kidney-pelvis underdevelopment and 50% coffee and aspirin treatments resulted in slightly reduced organ wt. Cleft palate was more common in the foetuses of coffee- and aspirin-treated rats than in

water-treated controls but in the coffee-treated animals the incidence was inversely related to coffee and caffeine dosage. JA

52

New sorting methods unveiled in Kenya.

Anon.

Tea and Coffee Trade Journal 151 (7), 20, 46 (1979) [En]

A new 20 000 t coffee storage and grading complex was built by the Kenya Planters' Cooperative Union, incorporating modern optical sorting equipment, i.e. electronic colour sorters and electronic separation under UV light. The machines are bio-chromatic, and used to remove pales, stinkers, water-damaged, foxy, black and insect-damaged beans. Electronic separation under UV light removes beans glowing under UV (but showing no defects under normal light) from clean fresh coffee. This elimination improves the cup value of the coffee. RM

53

Decaffeination of tea.

Societe des Produits Nestle SA

UK Patent Application 2 012 544A (1979) [En]

A process is described in which an aqueous tea extract is cooled to precipitate tannins complexed with a portion of the caffeine. The insolubles are separated and treated to extract the caffeine before their return to the extract. IFT

54

Coffee extract.

Societe des Produits Nestle SA

UK Patent Application 2 013 075A (1979) [En]

The foaming propensity of aqueous coffee extracts used in the preparation of carbonated beverages is reduced by acidification to pH 3-4.5 with stirring to flocculate out foam-including components. IFT

55

[Coffee granulator.]

Meiji Milk Products Co. Ltd.

Japanese Examined Patent 5 424 910 (1979) [Ja]

Apparatus is described in which fine powdered foods, such as coffee, are humidified on route to a granulator. IFT

56

Fruit and tropical products.

Commonwealth Secretariat

Fruit and Tropical Products June, 89pp. (1979) [En] [Marlborough House, London SW1Y 5HX, UK]

Trading figures and statistics are tabulated for various food commodities. Data on fruit covers production, exports and imports of canned fruits; UK imports of fresh fruit, fresh vegetables, canned and bottled fruit, fruit juices, preserved fruit and vegetables and dried fruit; EEC imports of fresh fruit, canned and bottled fruit in syrup, fruit preserved without sugar, fruit

juices, dried fruit and preserved vegetables; and US trade in fresh, canned and frozen fruit and vegetables and fruit juices. Data on coffee includes production, exports, imports, distribution, stocks and sources of raw coffee, exports and imports of soluble coffee, roasting, and coffee prices. Data on cocoa covers production, exports, imports, distribution of exports, import sources of raw cocoa, exports and imports of cocoa butter, paste/cake and powder, grindings and prices of cocoa. Data on oilseeds and vegetable oils cover production, exports, imports, stocks and prices. Data on spices deal with trade in pepper, Indian and Sri Lankan spice exports, UK, French, West German, Japanese, and US spice imports, pepper prices and prices of other spices. SP

57

[Effect of steam treatment on the composition of phenolic components of green and roasted coffee.]

Effekte der Wasserdampfbehandlung auf die Zusammensetzung der phenolischen Inhaltsstoffe im Roh- und Röstkaffee.

Rahn, W.; Meyer, H.-W.; König, W. A.

Zeitschrift für Lebensmittel-Untersuchung und -Forschung 169 (5) 346-349 (1979) [11 ref. De, en] [Inst. für Organische & Biochem. der Univ., Martin-Luther-King-Platz 6, D-2000 Hamburg 13, Federal Republic of Germany]

3,4-Dihydroxy styrene (3,4-DHS) was identified as a main phenolic component in the condensate of green coffee treated by the special KVV-process [Kaffee-Veredelungswerk, Hamburg]. Treated green coffee contained 3-6 x higher concn. of 3,4-DHS than untreated coffee. The enrichment depended on coffee provenance. Quantitative investigations of ether-soluble constituents in an acidified coffee infusion (pH 1.5) showed a significant diminution of catechol, furfuryl alcohol and 4-ethyl catechol for steam treated coffee. These results indicate that chlorogenic acids are decomposed to 3,4-DHS during steam treatment of green coffee. Partial removal of this substance effects a reduction of the catechol concn. in the coffee beverage. AS

58

Caramel considered to be a key component of coffee. Lee, S.

Tea and Coffee Trade Journal 151 (9) 6, 10 (1979) [En]

The importance of caramel in roasted coffee is discussed; it is responsible for all the colour in a cup, and in varying degrees for part of the flavour (more in the case of darker roasts). RM

59

[Roasting, packaging and storage of coffee beans.] Szcapanik, -.

Edesipar 30 (1) 14-19 (1979) [Hu, de, ru]

Experiments carried out with various types of coffee beans (Colombia, Costa-Rica and Brazil I, II and III) showed that in roasting the most important parameter is the water content of the coffee beans, due to their relatively fast water absorbing capacity. During

roasting, the loss of DM decreased with increasing original water content. It was observed, however, that the water content of the beans and the length of the cooling period after roasting have no significant effect on the quality of the coffee. By using identical packaging techniques, it was found that poorer quality coffee beans absorb water faster than good quality beans. Within 12 wk, the water content of 'Orient' coffee beans (medium quality, Brazil III or Brazil III and Robusta) increased from 2.94% to 5.36%, whereas that of 'Superior' coffee beans (best quality, Costa-Rica, Colombia and Brazil I) rose from 2.9% to only 3.69%. It was noted that the large scale water absorption affects the composition of percolated coffee. After 12 wk, the 'Orient' coffee components decreased from 37.6% to 22.2%, whereas no change could be observed in the case of 'Superior'. During storage the taste and aroma components seem to diminish, while the acid content tends to increase. By experimenting with various packaging techniques using Brazil III beans, it was observed that the kinetics of water absorption were most favourable when the coffee beans were packed in laminated metallized paper bags. This packaging method also favourably affected the quality of percolated coffee. ESK

60

[Coffee. Terminology.]

Portugal, IGPAI Reparticao de Normalizacao

Portuguese Standard NP-1535, 6pp. (1977) [Pt]

This standard gives definitions of numerous terms related to coffee, and includes a list of 77 terms in Pt, with their En and Fr equivalents. AJDW

61

[Method for preparation of a coffee blend.] Verfahren zur Herstellung einer Kaffeemischung.

Ewert, W. (Edelfett Werke Schlüter GmbH & Co.)

German Federal Republic Patent Application 2 811 353 (1979) [De]

A coffee blend for marketing in small bags is prepared from finely ground coffee and a liquid coffee concentrate. The coffee particles are stirred up by an air stream while being sprayed with the liquid concentrate at approx. 40°C, and the mixture is dried. W&Co

62

Cantilevered instantaneous heating brewer.

Vitous, C. J. (Cory Food Services Inc.)

United States Patent 4 178 842 (1979) [En]

A heater for brewing beverages, specifically coffee, has a heavy heat transfer mass in the upright, while the arm under which the coffee jug is placed is made of a light-wt. material. HBr

63

Brewing apparatus.

Baron, B.

United States Patent 4 176 588 (1979) [En]

A domestic brewing apparatus for coffee, broth and the like includes a cup and a pair of rings which telescope to hold filter paper which is first shaped around the cup and then partially inserted in it. HBr

64

Coffee processing research: a review. [Review]

Kulaba, G. W.

Kenya Coffee 44 (520) 23-34 (1979) [many ref. En]

Important aspects of coffee processing are reviewed with a view to identifying major areas of future research, specifically fermentation studies - the 2-stage fermentation procedure with commercial pectic enzymes, natural enzymes from fermenting coffee, mucilage composition and patterns of enzymic changes, pollution and coffee factory waters, and chemical characteristics related to quality aspects of the fermentation process; coffee drying studies - sun-drying of Arabica coffee, machine-drying of coffee, raw bean colours, and chemistry and physical effects of drying; coffee storage studies - storage methods and quality deterioration, and chemistry of quality deterioration; defectives - 'stinkers' or overfermented coffee beans, and other bean defects; scientific assessment of coffee quality - advantages over current subjective method, studies on the volatile aroma of roasted coffee, studies on green coffee volatiles, assessment by chemical composition of the green bean, and UV-light fluorescent sorting in quality assessment; and miscellaneous studies - products derived from low quality coffee, paints for coffee stores, fermentation tanks and channels, covering materials for drying parchment coffee, moisture meters for coffee, and factory design. RM

65

Coffee decaffeination.

Studiengesellschaft Kohle mbH

UK Patent Application 2 014 425A (1979) [En]

A process is described in which the surface of a thin film of aqueous coffee extract is treated with CO₂ under supercritical conditions. IFT

66

[Chromatographic profile of the volatile fraction of coffee. Difference between healthy and stinking raw coffee. Influence of roasting on the bean and beverage.]

Cros, E.; Guyot, B.; Vincent, J.-C.

Cafe-Cacao-The 23 (3) 193-202 (1979) [13 ref. Fr, de, en, es] [IFCC, Montpellier, France]

A method of concn. and analysis of trace volatile organics in gases and biological fluids [see *Chromatographia* (1973) 6, 67-70] and of S-compounds in coffee [see *FSTA* (1978) 10 10H1346] was used to evaluate coffee quality. It involved pre-concn. of the volatile fraction on Tenax GC, followed by GLC. The chromatographic profiles of the volatile fractions from healthy and stinking green coffee of the same origin (Arabica, Cameroon), and from light, medium and dark roasted coffee beans and liquor are shown graphically and in tables. Considerable qualitative and quantitative differences were observed between the profiles of healthy and stinking beans, allowing quick detection of 'stinkers'. A close relation was revealed between the volatile fraction of coffee beans and that of the coffee beverage. The composition of headspace volatiles was dependent on the degree of roasting, allowing its

application as a quality index for roasted coffee. The analytical method is particularly useful for evaluating coffee during storage and for coffee with high moisture and low volatiles contents. RM

67

Decaffeination of coffee.

Studiengesellschaft Kohle mbH

British Patent 1 554 971 (1979) [En]

A process is described in which coffee to be decaffeinated is associated with an adsorbent for caffeine and treated with moist CO₂ in a supercritical state. IFT

68

Coffee brewer.

Pugliese, J. P.; Robbins, T. J. (Econo-Brew Inc.)

United States Patent 4 174 659 (1979) [En]

Coffee brewer has a cup-shaped apertured reservoir holding enough water to fill a cup of desired size, and a coffee receptacle suitable to make 1 cup of brewed coffee. HBr

69

Coffee pulper benefits grower.

Downing, G.

Tea and Coffee Trade Journal 151 (11) 22 (1979) [En]

The Nova hand-operated coffee pulper introduced by E. H. Bentall & Co. Ltd. is briefly described. It includes an entirely prefabricated pulper frame, a chain and sprocket drive, a stainless steel pulping drum cover and an adjustable throat to ensure correct feed rate of fresh cherry coffee. RM

70

Ground coffee needs met by granulizer.

Enberg, K. R.

Tea and Coffee Trade Journal 151 (11) 20-21 (1979) [En]

The "Series 30" coffee granulizer is described. Easy and safe to operate and with min. maintenance requirements, it produces 2300 kg/h of filter-size granules; it granulizes, scalps, mixes and integrates chaff and raises product temp. by < 10°C without external water cooling. Quiet, vibration-free operation is achieved by separate chain drives in an oil bath for each grinding section. Regular or drip grinds, fine grinds and superfine grinds can be produced. Total operation is controlled from a separate control panel. RM

71

[Effects of location, pulping method and post-harvest storage time of coffee on polyphenoloxidase activity and beverage quality.]

Oliveira, J. C. de; Silva, D. M.; Amorim, H. V.; Teixeira, A. A.

Cientifica 7 (1) 79-84 (1979) [16 ref. Pt, en] [Dep. de Fitotecnia, Fac. de Ciencias Agrarias & Vet., Jaboticabal, Sao Paulo, Brazil]

Bourbon Amarelo and Mundo Nova cv. coffee beans from 4 different locations were pulped 1-4 months after harvesting by the natural and soda techniques. Neither

location, pulping method nor storage time had any marked effect on beverage quality, but all 3 parameters had a significant effect on the polyphenoloxidase (PAO) activity; e.g. for 15 samples of each, natural pulping gave PAO activities of 12.11–29.11 (mean 18.61) vs. 55.00–81.33 (mean 68.05) for soda pulping (expressed as mg N in extract). HBr

72

[Method for primary extraction of ground coffee.]

DEJ International Research Co. BV

Netherlands Patent Application 7 809 885 (1979) [NI]

Extraction of ground coffee uses only a small amount of water, thus eliminating the concn. process after extraction. The aromatic hydrophobic components of the coffee are stripped from the extraction liquid in the form of a conc. aqueous solution. This method is far less expensive than freeze-drying, and provides a product of similar quality with a "fresh brew note". W&Co

73

[Colorimetric measurements on roasted coffees.]

Desarzens, C.

Mitteilungen aus dem Gebiete der

Lebensmitteluntersuchung und Hygiene 71 (1) 81–86 (1980) [4 ref. Fr, en, de] [Societe d'Assistance Tech. pour Produits Nestle SA, CH-1814 La Tour-de-Peilz, Switzerland]

Tristimulus colour measurements were performed on ground roasted arabica coffee. Increasing degree of roasting decreased brilliancy (Y) and decreased predominant wavelength. Effects of sample preparation methods were studied; brilliancy increased as particle size decreased, but predominant wavelength was unchanged. Removal of testa from samples decreased brilliancy. Storage of coffee up to 1 yr after roasting did not markedly affect brilliancy measurements. Measurements performed on coffee extracts, rather than directly on roasted coffee, showed that degree of roasting did not affect brilliancy of extract, but degree of grinding did; extracts of finely ground samples had lower brilliancy. Measurements were performed with a Macbeth MS 2000 reflectance spectrophotometer. DIH

74

Instant coffee.

Israel, Standards Institution of Israel

Israel Standard SI 909, 9pp. (1977) [En]

This standard applies to water-soluble instant coffee from the Putoria (Rubiaceae) family only, either normal or decaffeinated instant, and covers packaging (e.g. cans), sampling, test methods and sensory characteristics. Specific requirements include: contents of water and evaporative material, < 3–4%; carbohydrates (as dextrose), < 36%; ash, 7–14%; K, ≤ 3.5%; Na, ≤ 0.09%; K/Na ratio, ≥ 50; and caffeine, ≥ 2.5% (normal) and ≤ 0.3% (decaffeinated). pH shall be 5.3–4.7. Added SO₂ is not permitted; SO₂ from production processes shall not exceed 60 p.p.m. KME

75

[Quantitative determination of caffeine in foods by high-performance high-pressure liquid chromatography.] Zur quantitativen Bestimmung des Coffeingehaltes in Lebensmitteln mit Hilfe der HPHPLC.

Jürgens, U.; Riessner, R.

Deutsche Lebensmittel-Rundschau 76 (2) 39–42

(1980) [18 ref. De, en, fr] [Landesuntersuchungsamt für das Gesundheitswesen Nordbayern, Henkestrasse 9–11, 8520 Erlangen, Federal Republic of Germany]

A high-performance high-pressure liquid chromatographic (HPHPLC) procedure for detn. of caffeine in coffee, tea, lemon tea products, cola drinks, etc. is described. Caffeine is extracted from the sample with boiling water in the presence of MgO; the extract is then filtered, and separated by HPHPLC on a Hewlett-Packard RP-8 reversed-phase column, using water/acetonitrile (80:20) for all samples except decaffeinated coffee, for which a water/acetonitrile gradient (90:10 initially, 70:30 after 2 min) is used. Caffeine is determined in the eluate by optical density measurement at 272 nm. Examples of chromatograms are presented. A rapid method for detection of addition of caffeine to lemon tea drinks is described, based on detn. of the theobromine/caffeine ratio by HPHPLC using a water/acetonitrile gradient (95:5 initially, 90:10 after 0.8 min, 80:20 after 2.5 min). A table of data is given for theobromine/caffeine ratios of various teas and lemon tea products. AJDW

76

[Is coffee hazardous to health?]

Aniansson, B.; Bruce, A.

Var Föda 30 (7) 269–278 (1978) [28 ref. Sv, en] [Statens Livsmedelsverk, 751 26 Uppsala, Sweden]

Aspects considered include: the caffeine content of coffee and other beverages (tea, cocoa, mate, cola drinks); pharmacological effects of caffeine; addiction to caffeine; irritant action of coffee constituents on the gastric mucosa; coffee in relation to cardiovascular disease; coffee and cancer; and possible teratogenic effects. AJDW

77

8th International Scientific Colloquium on Coffee.

[Conference proceedings]

Association Scientifique Internationale du Cafe 571 pp. (1979) [many ref. En, Fr, De, Es] 34 Rue des Renaudes, 75017 Paris, France; ASIC

Papers given at the ASIC 8th International Scientific Colloquium on Coffee, held in Abidjan, Ivory Coast, on 28 Nov.–3 Dec. 1977, are presented under the following session headings: chemical analysis and composition (pp. 33–161), chemistry in relation to technology (pp. 163–284), physiological effects (pp. 285–325) and agronomy (pp. 327–538). The following individual papers are included. Recent developments in the chemistry and technology of coffee; a review, by R. F. Smith (pp. 21–31, 244 ref. En, fr). Tracer studies on biosynthesis of caffeine in *Coffea arabica*, by T. W.

Baumann & H. Wanner (pp. 135-137, 5 ref. En, fr). Caffeine production in tissue cultures of *Coffea arabica*, by P. M. Frischknecht, T. W. Baumann & H. Wanner (pp. 139-142, 7 ref. En, fr). Molecular and cellular sites of action of caffeine, by L. Puglisi, F. Maggi & R. Paoletti (pp. 285-290, 36 ref. En, fr). Incidence of neoplasms and arteriosclerosis in rats during 2-year feeding of instant coffees, by H. P. Würzner, E. Lindström, L. Vuataz & H. Luginbühl (pp. 319-323, 4 ref. En, fr). Coffee and pregnancy, by C. Schlatter (p. 325, En, Fr). A further 33 papers are abstracted separately in FSTA and can be found in the author index under Association Scientifique Internationale du Cafe [8th Symposium]. AL

78

[Method for production of instant coffee substitute beverages.]

Lomachinskii, V. A.; Nakhmedov, F. G. (Union of Soviet Socialist Republics, Vsesoyuznyi Nauchno-issledovatel'skii Institut Konservnoi Promyshlennosti i Spetsial'noi Pishchevoi Tekhnologii)
USSR Patent 683 707 (1979) [Ru]

An increased yield of high quality product is obtained by roasting grains and chicory, mixing the ingredients, adding 10-20% tannin extract containing 18-20% tannin, extracting, and drying the extract. W&Co

79

Recirculation of water combined with land treatment as a solution to the problem of river pollution from coffee factories.

Kenya, Ministry of Water Development
Kenya Coffee 44 (524) 23-29 (1979) [6 ref. En]

Past and future legislation on water pollution control by coffee processing factories is reviewed, and instructions given for factories operating the recirculation systems on: pulping, hulling and pre-grading; fermentation; final washing and grading; and soak water. Following a water pollution crisis during the 1973/1974 pulping season, the water allocation has been set at 5000 gal/t coffee processed. RM

80

ABC of coffee: coffee terms [beginning with the letter C].

Anon.

Indian Coffee 43 (11) 333 (1979) [En]

81

ABC of coffee: coffee terms [beginning with the letter D].

Anon.

Indian Coffee 43 (12) 362 (1979) [En]

82

ABC of coffee: coffee terms [beginning with the letter E].

Anon.

Indian Coffee 44 (1) 4 (1980) [En]

83

[Treatment of a roasted coffee steam distillate.]

Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel BV

Netherlands Patent Application 7 801 778 (1979) [NI]

The "steam-distillate" taste of coffee extracts obtained through steam distillation is eliminated by bringing the distillate into close contact with finely ground coffee for a period of 5 min to 2 h depending on the temp. and the grain size of the coffee powder. The ground coffee powder is then separated from the steam distillate by means of a fine sieve. W&Co

84

[Chemical and biological aspects of the composition of green coffee.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Poisson, J.

pp. 33-57 (1979) [165 ref. Fr, en]

This extensive review covers the composition of the green coffee bean as the raw material for edible coffee. The constituents of Arabica coffee are better known than those of Robusta Coffee, and other spp. of coffee tree have received practically no attention. Published data vary widely due to differences between individual trees and precision of analytical methods. Overall mean figures are tabulated for carbohydrates, lignin, lipids, proteins ($N \times 6.25$) and amino acids, ash, organic acids, trigonelline and caffeine. Individual compounds are discussed in detail with their chemical structures, occurrence and relation to coffee quality. Glucides comprise > 50% of DM, predominantly polysaccharides with few monosaccharides; glucide composition has little relation to drinking quality but is significant in Maillard reactions. Lipids, steroids and terpenoids comprise approx. 13% and are important to coffee quality due to their susceptibility to rapid breakdown and oxidation to unpleasant products. Proteins + amino acids (detailed) are 11-15% and comprise a high proportion of glutamic and aspartic acids, with negligible acids of nutritional importance; there are some arabica-robusta differences. Caffeine content is a genetic character: contents are Arabica 0.5-1.9%, Robusta 1.16-3.27%, with other minor var. < 1.0% and some caffeine-free. Its biosynthesis, binding to chlorogenic acid and release by roasting are discussed. Organic acids (detailed) are important in processing changes and to ultimate flavour. K is the major ash component and is dietetically significant. A large number of volatiles in trace amounts, differing between green and roast beans, determine the aroma quality. ELC

85

[Fine structure of the green coffee bean.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Dentan, E.

pp. 59-64 (1979) [5 ref. Fr, en] [Lab. de Microscopie, Soc. d'Assistance Tech. pour produits Nestle SA, Switzerland]

Histochemical techniques and fluorescent and polarizing microscopy were applied to frozen sections of green coffee beans (var. robusta). This was followed by a new method of producing ultra-thin sections for examination by transmission electron microscopy. The application of optical and electron microscope techniques to the cell wall and the cytoplasm is described together with a series of photographs. By these means it was possible to locate the constituents of various structures, i.e. proteins, polysaccharides, lipids, free fatty acids, glycerides, chlorogenic acids, serotonin, lignin, pectins, mineral salts and some of the caffeine. ELC

86

[Statistical distribution of the water contents of coffee beans and its relation to repeatability of the practical reference method of water determination.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture] Multon, J. L.

pp. 65-72 (1979) [15 ref. Fr, en] [Lab. de Biophysique des Aliments, INRA, 44072 Nantes Cedex, France]

Detn. of water content is important in relation to the storage and processing of green coffee beans. The present reference method involves an oven drying procedure at 130°C. Errors of repeatability (1 operator in a single laboratory) include (i) instrumental errors, (ii) water gains or losses from thermal changes or during manipulation, and (iii) sample fluctuations i.e. a particular sample may not represent the natural water distribution between beans. The total of (i), (ii) and (iii) (repeatability) was determined for green beans and formulae were developed for application to the standard method. Errors due to (i) and (ii) are computed as a max. of 0.10% water. It is shown that accuracy of moisture detn. for an individual bean is $\pm 0.07\%$. Water content is plotted for individual beans in a sample and shows a normal Gaussian distribution curve; from this it is calculated that the sampling error of water distribution between beans for the standard sample (30 beans) is $\pm 0.15\%$ of the absolute water content, based on the mean value for the individual beans. The total error of the standard sample is $\pm 0.25\%$ ($0.1 + 0.15$) and it is concluded that the recommended repeatability of 0.2% could be increased to 0.3% difference between 2 detn. without the need for repeat analyses. Errors arising from moisture distribution could be reduced by preliminary equilibration of samples for 15 h or by taking a larger sample e.g. 100 beans (not always practicable) giving $\pm 0.08\%$. ELC

87

[Carboxylic acids of coffee: results of different determinations.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture] Blanc, M.

pp. 73-78 (1979) [7 ref. Fr, en] [Soc. d'Assistance Tech. pour Produits Nestlé SA, Orbe, Switzerland]

Carboxylic acids of coffee are of organoleptic importance, but their quantitative detn. is difficult. Literature data since 1956 are reviewed. The variable results obtained by different authors, for both soluble

and roasted coffees, are summarized in a table. 5 major acids found are citric, malic, pyruvic, acetic, and lactic, with agreement that citric acid is the most abundant. Quinic acid is also known to occur but quantitative data are limited. A range of coffees was investigated, including green beans, commercial soluble coffees and a range of roasted coffees from different types of equipment. The 5 major acids were determined directly in dilute coffee solutions by means of enzymes specific for each, supplemented by TLC. Free quinic acid was determined by gas chromatography of the trimethylsilyl derivative. 2 roasting trial (Tanzania and Kenya coffees) results are tabulated for various degrees of roasting, giving wt. losses from 9.65 to 20.00%. During roasting, citric acid was reduced significantly by $> 50\%$ and malic acid by 60%. Lactic acid initially increased during roasting up to 12-13% wt. loss, then declined in irregular fashion. Pyruvic acid remained fairly constant. Acetic acid (initially relatively minor) increased during roasting, often rapidly depending on procedure and equipment used. The combined content of all 5 acids reached a max. value (detectable also by taste) at the 14-16% wt. loss level. Quinic acid showed a marked increase, with close linear correlation with decreasing chlorogenic acid. ELC

88

High pressure liquid chromatography on chlorogenic acid isomers in coffee. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Rees, D. I.; Theaker, P. D.

pp. 79-84 (1979) [7 ref. En, fr] [Lyons Cent. Lab., London, UK]

A HPLC method is described which gives a clear separation of feruloylquinic acid (FQA) from the other chlorogenic isomers. Also, by modifying the eluting solvent system the diCQA isomers (3,4-, 3,5- and 4,5-dicaffeoylquinic acids) were determined. Samples of green or roasted coffee were ground, shaken with 70% 2-propanol, and the supernatant resulting after centrifuging was collected; extraction was repeated 4 times. Bulk supernatants were diluted with 70% 2-propanol and used for HPLC analysis, reversed phase, using a 60 cm \times 4 mm stainless steel column filled with Co: Pell ODS. Eluents used were 2% formic acid + 2.5% acetic acid in water for 3-CQA (3-caffeoylquinic acid) and 3-FQA, and 5% propionic acid in water for the diCQA's. The metaperiodate/molybdate colorimetric technique described by Clifford & Wight [see FSTA (1976) 8 10I1821] was also applied to green bean extracts. Results obtained on a number of Arabica and Robusta green coffees from various sources and on Arabusta coffee are given in tables. Average contents in green beans (% of dry sample) were for Robusta and Arabica resp.: 3-CQA, 5.8 and 5.7; FQA, 1.5 and 0.6; diCQA's, 1.8 and 0.8; and total chlorogenic acid isomers, 9.1 and 7.1. Changes during roasting were monitored, and showed that amounts of all isomers decreased. Changes in total isomer content (% of dry green bean) of Zaire Robusta and Kenya Arabica, resp., were: green, 9.2 and 7.6; very light roast, 7.1 and 4.7; medium roast, 5.0 and 2.6; medium dark, 2.6 and 1.2; and dark roast, 0.6 and 0.5. Of the individual diCQA's, 3,5-diCQA decomposed more rapidly than the other 2 isomers. AL

89

[Influence of roasting on the composition of coffee.] Rösteffekte auf die Kaffeezusammensetzung. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture] Baltes, W.

pp. 85-96 (1979) [57 ref. De, en, fr] [Tech. Univ., Berlin]

As in most foods, the aroma of coffee is formed by special heating of the raw product. During this process a great many different reactions take place which are closely connected to one another by the high reactivity of the arising reaction products. Most important among them are the non-enzymic browning reaction (Maillard reaction) and degradation of amino acids (Strecker degradation). On the other hand, pyrolytic fragmentation rises with roasting temp. Besides representation of reaction types mentioned, a review of the effect of heat stability and of pyrolytic fragmentation product on roast coffee aroma is given. AS

90

[Observations on pest damaged coffee beans.] Über Beobachtungen an schädlingbefallenen Rohkaffees. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture] Wurziger, J.

pp. 97-100 (1979) [De, en] [Hygienisches Inst. der Freien & Hansestadt, Hamburg, Federal Republic of Germany]

Coffee beans infested by the coffee berry borer form viridic acid, which may serve as a means of detection. The larval stage lasts between 10 and 26 days and the total time from egg to beetle is 25-35 days. It is shown that infected beans contain more chlorogenic acids than normal beans (e.g. Robusta dark colour 8.6%, light colour 9.0% and infested 10.2%) but with no difference in the caffeine content. No viridic acid appears in beans infested after harvesting and processing and its detection is useful for differentiation and assessment of damage. ELC

91

[Green and roasted Arabusta coffee beans.] Über Arabusta-Roh- und -Röstkaffee. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Wurziger, J.; Drews, R.; Bundesen, G.
pp. 101-108 (1979) [3 ref. De, fr, en] [Hygienisches Inst. der Freien & Hansestadt, Hamburg, Federal Republic of Germany]

Commercial coffee beans, both green and roasted, are usually differentiated according to shape and aromatic properties as 'Arabica' or 'Robusta'. Because both types have many var., due to mutations and genetic crosses, it is not always easy to identify them without chemical analyses. Such crosses are 'Arabusta' and 'Catimor' (with Brazilian coffee). In both green and roasted coffee beans, rapid and reliable identification can be obtained with the Wurziger & Purozrany colour reaction [FSTA (1972) 4 12H1937] in which the petrol ether extracted 'Arabica' coffee oil shows an intensive green or green-blue coloration when heated with potassium iodide and glacial acetic acid, due to the presence of 2 diterpenes, cafestol and kahweol. These diterpenes are missing in

the coffee oil of 'Robusta'. The green coffee beans of 'Robusta' also contain less fat than those of 'Arabica'. Study of roasted 'Arabusta' coffee beans (1976-1977 crops) failed to establish a relationship between taste and diterpenes content, therefore no improvement in taste can be expected with increased kahweol content. Chemical analyses showed that the properties of the fine particles of ground 'Arabica' roasted coffee beans were similar to those of mixed ground 'Arabusta' roasted coffee beans. ESK

92

Critical comparison of six spectrophotometric methods for measuring chlorogenic acids in green coffee beans. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Clifford, M. N.; Staniforth, P. S.
pp. 109-113 (1979) [17 ref. En, fr] [Dep. of Sci. & Food Tech., Grimsby Coll. of Tech., Grimsby, UK]

The chlorogenic acids content (caffeoylquinic acids, dicaffeoylquinic acids, ferruloylquinic acids, *p*-coumaroylquinic acids, and caffeoylferuloylquinic acids) of green coffee beans was measured on a Unic am SP800 spectrophotometer, using 6 spectrophotometric reagents (molybdate (pH 6.5), borate (pH 7.0), molybdate ascorbate (pH 6.5), borate ascorbate (pH 7.0), periodate, and thiobarbituric acid). Results were compared by statistical analysis (repeatability and reproducibility). The periodate reagent gave the best results (2.2 and 4.6%) and measured at least 98% of the total chlorogenic acids content. On the other hand, the molybdate reagent gave the best results (5.5 and 8.7%) for total caffeoylquinic acids. The chlorogenic acids only constitute $\leq 10\%$ of dry mass of green coffee beans. ESK

93

[Gas-chromatographic-mass spectrometric analyses of phenols and diphenols in various varieties of roasted coffee beans.] Gaschromatographisch-massenspektrometrische Untersuchung von Phenolen und Diphenolen in Röstkaffees verschiedener Sorten. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Tressl, R.
pp. 115-120 (1979) [12 ref. De, fr, en] [Lehrstuhl für Chemisch-Tech. Analyse der Tech. Univ., Berlin]

In the various coffee types about 30 volatile phenols, 10 di- and tri-phenols and 5 caramel components were identified and (semi)quantitatively determined. Isolation of volatile phenols from Arabica, Robusta, and Arabusta hybrid types of roasted coffee beans recovered 70-90% of the alkyl-substituted monophenols and 2-methoxyphenols. Roasted coffee beans contained about 10 volatile phenol compounds, mainly 4-vinylguaiacol, 4-ethylguaiacol, guaiacol and phenol; Robusta contained the highest amounts of phenol compounds followed by Arabusta, then Arabica. In strongly roasted coffee, the concn. of most of the compounds increased by 5-10 fold, with the exception of 4-vinylguaiacol and vanillin, due to the thermal fragmentation of precursors, ferulic and *p*-coumaric acids, to produce 4-ethylguaiacol, isoeugenol, guaiacol,

4-vinylguaiacol, 4-methylguaiacol, vanillic alcohol and acetovanillin. 6 diphenols and 5 caramel components were identified and quantitatively determined in the 3 coffee types (recovery rate being 50% for pyrogallol and 70–80% for other components); Robusta contained the highest concn. of these components, mainly benzocatechin and pyrogallol. While in Robusta strong roasting increased mainly the concn. of 4-ethylbenzocatechin, in Arabica the main effect was increased concn. of phenol, benzocatechin, hydroquinone, pyrogallol and 4-ethylbenzocatechin. The concn. of 4-vinylbenzocatechin, vanillin, 3,4-dihydroxybenzaldehyde and 3,4-dihydroxycinnamaldehyde remained practically unchanged. The precursors of these compounds are caffeic and quinic acids which are subject to thermal pigmentation. Caramel components were determined in the 3 types of roasted coffee beans. Arabica contained the highest concn. of furanol, ethylfuranol, isomaltol, cyclic compounds, and 5-hydroxy-5,6-dihydromaltol, whereas Robusta contained the highest concn. of maltol. ESK

94

Liquid chromatographic coffee wax analysis. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]
Folstar, P.; Pilnik, W.; Plas, H. C. van der
pp. 121–124 (1979) [10 ref. En, fr] [Lab. of Food Chem., Agric. Univ. Wageningen, Netherlands]

The petroleum ether insoluble substances in wax from green coffee beans were fractionated without preceding derivatization by polyamide column chromatography. The main fraction of these substances was found to consist of $N\beta$ -alkanoyl-5-hydroxytryptamine (C-5-HT). C-5-HT was fractionated by HPLC on a LiChrosorb 10 RP18 column; the amount of the main peak ($N\beta$ -behenoyl-5-hydroxytryptamine: C₂₂-5-HT) as determined by HPLC can be used as an analytical parameter for the amount of wax present in green coffee beans. AS

95

[Determination of caffeine content in various samples, under various conditions.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]
Quijano-Rico, M.; Acero, M. T.; Morales, F. E.; Piedrahita, C.
pp. 125–134 (1979) [5 ref. Es, fr, en] [LIQC, Bogota, Columbia]

As the usual detn. of the caffeine content requires 3 different steps, such as extraction, purification and detn., a simpler and more economical method was developed, based on the precipitation of the caffeine with an iodine solution as caffeine hydroiodide, separation of the precipitate by filtration, elimination of excess iodine with the H_2SO_4 , freeing the iodine from the precipitate with water, and detn. of the liberated iodine by volumetric analysis. For continuous, automatic determination of the caffeine content, the caffeine was separated from the medium in its gaseous phase by pyrohydrolysis and measured in a UV

spectrophotometer. For the continuous control of caffeine, aerosols in a gaseous flow, a combination of laser beam as light source and a photoelectric cell as detectors, can also be used. ESK

96

Detection of trace amounts of methylated uric acids in crude caffeine from various sources. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]
Citroreksoko, P. S.; Petermann, J.; Wanner, H.; Baumann, T. W.
pp. 143–145 (1979) [9 ref. En, fr] [Inst. of Plant Biol., Univ. Zürich, Zürich, Switzerland]

When the concn. of 3 methylated uric acids (1,3,7,9-tetramethyluric, 0(2),1,9-trimethyluric, and 0(2),1,7,9-tetramethyluric acids) were measured in crude caffeine extracted from the seeds or other plant materials of various *Coffea* spp., *Camellia sinensis* (tea) and *Ilex paraguariensis* (mate tea) (chromatographic-spectrophotometric analysis), no methylated uric acids were detected in the seeds of *Coffea arabica* and *C. canephora*, while the seeds of *C. liberica* and *C. laurentii* contained relatively high amounts of 1,3,7,9-tetramethyluric acid and the seeds of *C. excelsa* and *C. laurentii* contained the other 2 methylated uric acids. Traces of 1,3,7,9-tetramethyluric acid were detected in the young and expanded leaves of Assam tea (*C. sinensis*), but no methylated uric acids could be found in mate tea (*I. paraguariensis*). ESK

97

[Quantitative determination of vitamin PP (niacin) in *Coffea canephora* var. *robusta* by a microbiological method using *Lactobacillus arabinosus*.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]
Tchetché, A. G.
pp. 147–152 (1979) [14 ref. Fr, en] [Lab. de Chimie Organique Biol., Fac. des Sci., Abidjan]

The use of *Lactobacillus arabinosus* strain 17/5 (ATCC 8014), instead of the usual *Proteus* strain, had extended the detn. range of niacin to 0.05–0.5 μ g, with the added advantage of the strain being able to grow in a synthetic medium. The niacin to be measured had been obtained from the green or roasted coffee beans by either chemical or aqueous extraction (the total niacin content of the beans being always higher than the extractable amount, although chemical extraction is superior to aqueous extraction) and then added to the medium. When the coffee beans had been roasted at temp. of 140–300°C, it was found that the amount of niacin actually had increased in the beans at 220, 240 and 260°C and only declined at 280 and 300°C. The results were reproducible. ESK

98

[Comparison of the aromatic substances of Arabusta, Arabica, and Robusta coffee beans by the 'headspace technique'.] Vergleich der Headspace-Aromaprofile von Arabusta-Kaffee mit Arabica- und Robusta-Sorten. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Gutmann, W.; Werkhoff, P.; Barthels, M.; Vitzthum, O. G.
pp. 153-161 (1979) [14 ref. De, fr, en] Hag AG, Bremen, Federal Republic of Germany]

The various aromatic substances were compared in the green and roasted beans of Arabica, Arabusta and Robusta coffee by the so-called 'headspace technique' (the aromatic substances present in the headspace over a sample at ambient temp. being absorbed on active carbon or organic polymers, such as Tenax or Poropak, and then analysed in a highly sensitive gas chromatograph). In the roasted beans of Arabusta and Arabica, the furan compounds were found to be predominant, while Robusta beans contained more S compounds than those of the other two. When the composition of the green beans was analysed, it was found that Arabusta beans were especially rich in 2-methoxy-3-isobutylpyrazine, whereas Arabica beans contained higher amount of isoamylalcohol. The quantitative comparison of the various groups of volatile compounds (aromatic substances, such as xylol, alkylbenzenes and naphthalene, as well as terpene, furan and pyrazine) present in the green beans showed terpene predominant in Arabica, while in contrast to roasted beans, furan occurred only in small quantity. A list of 80 newly described volatile substances present in green coffee beans is given. ESK

99

Packaging and marketing of roasted coffee. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]
Heiss, R.; Radtke, R.; Robinson, L.
pp. 163-174 (1979) [13 ref. En, fr] [Inst. of Food Tech. & Packaging, Tech. Univ., Munich, Federal Republic of Germany]

Packaging of roasted coffee is described as an integrated system and the aspects which have to be taken into account in achieving an efficient and economical pack are depicted in a schematic form. Quality assessment, factors affecting quality in distribution (e.g. temp., partial pressure of oxygen), best methods of packaging (desorption of CO₂, measured filling, mechanical packing, including the use of low partial pressure of oxygen), shipping, and marketing are discussed in detail. ESK

100

Biochemical, physical and organoleptical changes during quality deterioration of green coffee beans. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]
Amorim, H. V.; Cruz, A. R.; St. Angelo, A. J.; Dias, R. M.; Melo, M.; Teixeira, A. A.; Gutierrez, L. E.; Ory, R. L.
pp. 183-186 (1979) [9 ref. En, fr] [Dep. of Chem., Esc. Sup. Agr., Univ. of Sao Paulo, Piracicaba, Brazil]

Data obtained included: physical measurements of whole bean and hard endosperm, polyacrylamide gel electrophoresis of water-soluble proteins treated with 2-mercaptoethanol, histochemical localization of lipids and phenolic compounds, and the measurement of polyphenol oxidase activity, free fatty acids, unsaponifiable matter, and potassium leaching in various green coffee beans samples processed and

stored in various ways. These indicated that in green coffee beans, under adverse environmental conditions (excess humidity, unfavourable temp., and physical damage), quality deterioration, both physical and organoleptic, was triggered by certain chemical and structural changes in the membrane affecting its permeability. The initial increase of phenol oxidase and/or peroxidase activity followed by a decrease indicated a release of these enzymes and their subsequent interaction with membrane substrates. In poor quality beans, the decrease of unsaponified matter, increased free fatty acids and potassium leaching suggested degradative processes in the beans. Changes in colour, density and organoleptic characteristics were also associated with changes of lipid and phenolic distribution patterns. ESK

101

[Advanced processing and grading method of green coffee beans.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Richard, M.
pp. 187-196 (1979) [Fr, en] [IFCC, Montpellier, France]

In Toumbokro, Ivory Coast, the Society for the Studies of Promotion of the Coffee Industry (SEPRIC) organized an experiment to improve on the traditional system of coffee processing in the area. In the integrated system, better quality coffee was obtained by controlling the quality of intake of green coffee seeds from the plantations (payment according to quality), controlling every stage of processing using up-to-date equipment (densimeter, colorimetric grading, etc.), dealing with sub-standard products, and creating optimum conditions for storage. ESK

102

[Unit operations in coffee technology.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Loncin, W.
pp. 197-201 (1979) [11 ref. Fr, en] [Univ. of Karlsruhe, Karlsruhe D-7500, Federal Republic of Germany]

In coffee technology, the methods of chemical engineering can be applied in various stages of the process, e.g. roasting of green beans, extraction of coffee, and drying the extract. Major specific problems to be solved are: the state of fermentation at harvesting and changes up to the time of processing, and their effect on yield and quality of coffee; method of selection of beans according to commercial quality; study of chemical and physical changes during roasting of green beans in relation to optimum conditions; detn. of optimum conditions for extraction, drying or freeze-drying of the extract; and finally the conditioning of roasted coffee and dried extract. Since the extremely complex chemical reactions, especially those taking place during roasting, which are responsible for taste and odour of drinking coffee are not yet wholly understood, empiricism still plays an important role in the process. ESK

103

[Preparation of coffee extracts.] Die Herstellung von Kaffee-Extrakt. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Sylla, K. F.

pp. 203-209 (1979) [29 ref. De, fr, en] [HAG AG, Bremen, Federal Republic of Germany]

The following basic stages in the preparation of coffee extracts are discussed from the technical point of view: roasting; grinding; extraction; aroma manipulation; concentration; separation and storage; freezing; freeze-drying; spray-drying; other drying methods; agglomeration; and packaging. A short survey of the technical literature, including patents, is also given. ESK

104

Concentration of coffee extracts to high product concentrations. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Pelt, W. H. J. M. van

pp. 211-216 (1979) [4 ref. En, fr] [GRESCO BV, 's-Hertogenbosch, Netherlands]

In the preparation of soluble coffee, the production cost is mainly determined by the cost of the drying process. Generally 2 drying processes are used, i.e. either spray-drying or freeze-drying. The moisture contents of the products are usually 3-5% and <2.5% by wt. resp. To reduce production cost the introduction of a less costly pre-concentration technique is recommended. New freeze concn. processes now available have the advantage that no volatile aroma substances are lost and thermal decomposition is practically nil. Since this process is more expensive than evaporation, it can be applied only to the stage of coffee extract concn. where the loss of aroma components and/or thermal decomposition must be avoided. The combination of freeze concn. and evaporation may permit pre-concentration of the coffee extract to 45-47% by wt., with reduction of drying costs and improved aroma retention. ESK

105

[Coffee roasting on fluidized air cushion.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Arjona, J.-L.; Rios, G.; Gibert, H.; Vincent, J.-C.; Roche, G.

pp. 217-226 (1979) [9 ref. Fr, en] [Lab. de Genie Alimentaire, Univ. des Sci. & Tech. du Languedoc, Place E. Bataillon, 34060 Montpellier Cedex, France]

When the traditional roasting process was compared with roasting on a fluidized air cushion, using Robusta and Arabica coffee beans, it was found that with the fluidized bed, the duration of roasting time was considerably reduced, the wt. losses of the roasted beans were less than figures quoted in the literature (12-17% vs. 18-20%) and the required energy for roasting 1 kg green coffee beans was less than that needed in the traditional method. The experiments also

showed that the temp. of the air had a considerable effect on the duration of roasting time; the optimum temp. being 220-260°C; under 220°C the roasting time was significantly extended, whereas over 260°C a very noticeable deterioration was observed in the organoleptic properties of the product. On the other hand, when the temp. was kept between the recommended values, the organoleptic properties of the roasted coffee beans were excellent, with even quality. ESK

106

[Identification of 'treated' roasted coffee.]

Nachweismöglichkeiten für bearbeitete Kaffees. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Meyer, H.-W.

pp. 227-234 (1979) [28 ref. De, fr, en] [Dr. Gilbert Chem. Lab., Hamburg, Federal Republic of Germany]

Although it was possible to identify decaffeinated coffees and coffees treated with various solvents by measuring the amounts of caffeine and/or 5-hydroxytryptamide residues, no suitable method existed for the identification of steam-refined roasted coffees. Based on the observation that in steam-refined roasted coffee extracts a significant reduction can be detected in the amount of methylalcohol-precipitable polysaccharides, a simple and reliable chemical method was devised. Since the experiments with various types and various ages of steam-refined roasted coffees showed that the amount of precipitable polysaccharides can be affected by the rate of roasting as well as by the type and age of the coffee, these variations should be taken into consideration. The method is not suitable for the examination of green coffee beans and soluble coffees. ESK

107

Preservation of aroma components during the drying process of extracts. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257]) [Lecture]

Kerkhof, P. J. A. M.

pp. 235-248 (1979) [35 ref. En, fr] [Dep. of Chem. Eng., Eindhoven Univ. of Tech., Netherlands]

Although coffee aroma compounds are highly volatile, retention occurs during drying because diffusion of volatiles within a drying particle is less than that of water. Therefore, the transport of aroma depends on the physical state and mobility of the components, as well as the geometry of the drying particles. The aroma components can be either homogeneously dissolved or dispersed. The retention of both types of aroma components in the various drying techniques, such as freeze-drying and spray-drying, is discussed. A correlation method of aroma loss estimation is available for homogeneously dissolved aroma components. It is emphasized that obtaining the highest possible aroma retention may not coincide with the optimum process or process condition. For example, in freeze-drying at high dissolved solids concn., a very dense product is obtained which has unfavourable handling qualities as an instant powder. ESK

108

Criteria for sensory evaluation of coffee beverage. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Pangborn, R. M.

pp. 249-250 (1979) [4 ref. En, Fr] [Univ. of California, Davis, California, USA]

Analytical techniques were developed for visual and flavour characterization as well as for the measurement of sensory properties of drinking coffee. They are based on the evaluation of the effect of water composition (distilled, soft and hard), method of extraction (open-pot, filter cone, automatic electric percolator and non-electric percolator), and of holding time and temp. Intercomparison of sensory methods, based on temporal characteristics, discrimination, perceived intensity, and degree of liking for sweetness in coffee beverages, were also applied. The techniques included the newly developed 'time-intensity' technique, where the strength of sweetness, bitterness, and coffee flavour were measured on a recorder chart with monitored time. This technique resulted in graphics of the temporal patterns of the initiation of the sensation, the duration and extinction point while the coffee was in the mouth, and after expectoration. ESK

109

[Effects of certain extraction parameters on the bitter taste of drinking coffee.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Voilley, A.; Sauvageot, F.; Durand, D.

pp. 251-259 (1979) [10 ref. Fr, en] [ENSBANA, Dijon, France]

Tasting experiments carried out with drinking coffee samples made from Arabica coffee (80% from Cameroon and 20% from Haiti and Columbia) showed that the taste of bitterness was increased with an increased proportion of ground coffee to water, length of extraction time, and increasing temp. from 70-85°C. They also showed that in the drinking coffee there was no direct relationship between the sensory evaluation of bitterness on the one hand, and the amounts of caffeine and dry extract on the other, although a relationship could be detected between caffeine content and the amount of dry extract during brewing, when in the first 5 min bitterness increased faster than the amount of dry extract. After 5 min, the increase was much slower. Thus the results indicated that in the drinking coffee, the determination of the amount of dry extract cannot replace sensory evaluation and the amount of caffeine present cannot represent the rate of bitterness. ESK

110

[Study of various coffee brewing techniques.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Pictet, G.; Vuataz, L.

pp. 261-269 (1979) [1 ref. Fr, en] [Soc. d'Assistance Tech. pour le Produits Nestle, Switzerland]

The efficiency (overall solubilization of solid and volatile components) of various types of commercially available coffee brewing machines based on continuous water circulation, filtration by continuous gravity,

filtration by gravity under pressure, or filtration with recirculation, was tested by using blended coffee beans. The behaviour of certain specific components (caffeine, chlorogenic acids, carbohydrates, etc.) was also examined. The organoleptic characteristics, especially freshness of aroma, natural acidity, and 'cereal' traces, as established by a taste panel were submitted to a multidimensional mathematical analysis for better comparison. The results showed that the continuous circulation method gave the most 'finesse' and freshness to brewed coffee, but without body. On the other hand, coffee obtained by trickling under pressure was rich in natural characteristics, bitterness and hardness dominating, but was deprived of 'finesse' and freshness. Filtration by gravity, however, gave a perfect equilibrium in the final product, where natural acidity and bitterness, aromatic intensity, and 'fullness of the cup' were all harmoniously blended together. ESK

111

[Effects of various technological treatments on the chemical and organoleptic properties of Robusta and Arabusta coffees.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Vincent, J.-C.; Guenot, M.-C.; Perriot, J.-J.; Gueule, D.; Hahn, J.

pp. 271-284 (1979) [3 ref. Fr, en] [Lab. de Chimie-Tech. de l'IFCC, Montpellier, France]

To determine the changes in various diffusible compounds during soaking, various types (Robusta Cameroon, Ivory Coast, Malagasy; Arabica Ethiopia, Maragogype Brazil, Arabica Mysore, Niaouli Togo) of green coffee bean samples were immersed in distilled water for 8, 16, 24 and 48 h, at 25°C, and dried in a ventilated oven at 60°C. Diffusion of caffeine and chlorogenic acids was rather rapid and there appeared to be a linear relationship between the reduction in vol. increase during roasting (roasting quality) and the length of soaking. In the drinking coffees, changes in acidity were not very significant, but there was a tendency towards decreased pH values. When the original pH values were relatively high, as in Mysore and Niaouli Togo, this decrease was especially noticeable. There was a significant reduction of bitterness, but also a diminished aromatic intensity of both pleasant and unpleasant flavours. Long soaking tended to bring out the harshness in the coffee. In a 2nd experiment, the effects of dry and under water fermentation methods on Robusta and Arabusta green beans were studied after removal of the outer layer of the beans. Control samples were subjected to the so-called dry procedure. In both experimental beans the dry and under water fermentation methods resulted in better physical properties (even colour) than in control beans. No significant difference could be detected between the caffeine and chlorogenic acids contents of Arabusta and Robusta, except that they were slightly lower in Arabusta. Neither treatment affected the vol. increase during roasting; however, the loss of wt. was somewhat less in Arabusta. Wet fermentation improved the organoleptic properties of drinking coffees, giving better results with Robusta; Arabusta drinking coffee was generally more pleasant than Robusta, although the characteristic acidity of Robusta was somewhat

reduced. The acidity of Arabusta coffee was similar to that of Arabica. Robusta coffee was more bitter than Arabusta coffee, but its bitterness was significantly reduced by soaking. ESK

112

[Effects of caffeine-containing and caffeine-less coffees on the sensory and central nervous system.] Die sensorischen und zentralnervösen Wirkungen des coffeinhaltigen und des coffeinfreien Kaffees. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Müller-Limmroth, W.

pp. 291-294 (1979) [De, en, fr] [Inst. für Arbeitsphysiologie der Tech. Univ., München, Federal Republic of Germany]

Comparisons were made of the effects of 2 cups (180 mg) of caffeine-containing coffee vs. 2 cups of caffeine-less coffee on the sensory and central nervous systems of 12 normal and 12 susceptible subjects, using the so-called 'double blind' method. It was found that although, under normal circumstances, caffeine may reduce motor reaction time, in susceptible subjects this was increased. It was also found that in reading letter combinations errors were less numerous in normal than in susceptible subjects; speed of reading was also slightly faster for normal than for susceptible subjects. ESK

113

The relationship of coffee drinking to death and cardiovascular disease. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Thomas, H. E., Jr.

pp. 305-310 (1979) [En, fr] [Boston Univ.-Framingham Study, Framingham, Massachusetts, USA]

The effect of coffee drinking on subsequent disease development was investigated in the Framingham Heart Disease Epidemiology Study, Framingham, Massachusetts, USA. Results from 18 yr of observations are discussed. No harmful effects appear to be attributable to coffee consumption as far as deaths from all causes, cancer deaths and the occurrence of cardiovascular disease are concerned. AL

114

[Presence of aflatoxins, sterigmatocystin and ochratoxin in green coffee beans.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Palo, D. de; Gabucci, G.; Valussi, S.

pp. 539-543 (1979) [42 ref. Fr, en]

In the port of Trieste, during 1 yr, no mycotoxins could be detected in 502 samples of green coffee taken from cargos originating from different parts of the world (55% from Indonesia, 30% from Africa, 10% from Brazil, and 5% from other parts of South America) by using a new method for the detection of aflatoxins and sterigmatocystin. However, in samples taken from 6 stocks of unmarketable coffee of Central African origin, which had been stored in the warehouse for 2 yr, 12 mg sterigmatocystin/kg was detected in 1 sample. ESK

115

[Free amino-acids in green coffee beans from Huambo (Angola): separation and identification by electrophoresis and thin-layer chromatography.] (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Pereira, A.; Pereira, M. M.

pp. 545-550 (1979) [12 ref. Fr, en] [Missao de Estudos Agronomicos do Ultramar, Lisbon, Portugal]

Coffee shrubs in the Huambo Plateau were identified as *Coffea arabica* by detection of an amino acid with properties corresponding to pipecolic acid; this amino acid is always present in the beans of *C. arabica* and its hybrids, but never in those of *C. robusta*. Generally the presence or absence of pipecolic acid in the various botanical spp. plays an important role in their taxonomic identification. Pipecolic acid is one of the substances which appear in the course of oxidative degradation of lysine by coenzyme A. As other oxidative products are formed during the catabolism of lysine, pipecolic acid may become a precursor in the synthesis of certain vegetable alkaloids. ESK

116

Statistical risks in the ISO draft standard (New York, June 1976) for the determination of insect-damaged beans. (In '8th International Scientific Colloquium on Coffee' [see FSTA (1980) 12 8H1257].) [Lecture]

Nunes Mexia, J.

pp. 551-552 (1979) [1 ref. En, fr] [Missao de Estudos Agronomicos do Ultramar, Lisbon, Portugal]

The statistical risks in the use of the draft standard are determined. A table is included where the probability of acceptance of a lot is given as a function of sample size and the true % of insect damaged beans. AS

117

[Method for adding or enhancing a roasted and burnt flavour to food and drinks.]

Polak's Frutal Works BV; Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel BV

Netherlands Patent Application 7 900 737 (1979) [NI]

The compound used is a furan derivative from the group 2-methyl-3-(furyl-2')propenal, 3-(5'-methylfuryl-2')propenal, 2-acetyl-3-methylfuran and/or 3-methyl-2-propionyl furan. Applications cited include coffee, cocoa, popcorn, cornflakes and baked beans. W&Co

118

[Method for adding or enhancing a roasted and burnt flavour to food and drinks.]

Polak's Frutal Works BV; Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel BV

Netherlands Patent Application 7 900 738 (1979) [NI]

The compound used is a pyridine or pyrazine derivative, from the group 2-ethyl pyridine, 3-n-propyl pyridine, 2-acetyl-3-hydroxypyridine, 2,3-dimethyl-5-ethyl pyrazine; 5H-6,7-dihydrocyclopenta(b)pyrazine; 2-methyl-5H-dihydropenta(b)pyrazine and/or 2-acetyl-3-methyl pyrazine. Applications cited include coffee, cocoa, popcorn, cornflakes and baked beans. W&Co

119

[Method for adding or enhancing a roasted and burnt flavour to food and drinks.]

Polak's Frutal Works BV; Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel BV
Netherlands Patent Application 7 900 739 (1979) [Nl]

The compound used is a thiazole derivative from the group 2-methyl thiazole, 2-ethyl thiazole, 4,5-dimethyl thiazole; 2,5-diethyl thiazole and/or 2-acetyl thiazole. Applications cited include coffee, cocoa, popcorn, cornflakes and baked beans. W&Co

120

Stackable container.

Clibborn, K. R.

UK Patent Application 2 023 407A (1980) [En]

A food container is adapted to be stacked above a beverage, such as a coffee cup, and having a slanting side wall groove to provide access to the beverage with a straw. IFT

121

Soluble coffee.

General Foam Products Ltd.

UK Patent Application 2 022 394A (1979) [En]

Freshly roasted coffee beans are quenched with liquid N after which they are ground to a colloidal particle size, combined with a chilled coffee extract and dried. IFT

122

Extended coffee product.

Kay, C.

United States Patent 4 188 409 (1980) [En]

A brewable coffee-type product comprises matrix granules of shells of edible nuts having pulverized coffee retained at their surfaces. IFT

123

Mass loss on drying for instant coffee: collaborative study.

Clinton, W. P.; Manni, P. H.; Ferry, J. M.

Journal of the Association of Official Analytical Chemists 63 (2) 178-179 (1980) [En] [General Foods Corp., Maxwell House Div., 250 North Street, White Plains, New York 10625, USA]

A collaborative study was undertaken to define an acceptable routine working method for detn. of mass loss in instant coffee. 14 laboratories of 24 invited to participate submitted results. The repeatability s. d. and coeff. of variation were 0.026 and 0.7%, resp. The reproducibility s. d. and coeff. of variation were 0.153 and 3.8%, resp. The method has been adopted as official first action. AS

124

Production of soluble coffee using the combination of freeze-concentration and freeze-drying. [Lecture]

Beke, G.; Bartucz-Kovacs, O.; Degen, G.

Bulletin de l'Institut International du Froid 59 (4) 1120-1121 Abstr. C1-2 (1979) [En, Fr] [Res. &

Development Lab. of the Hungarian Deep Freezing Ind., Budapest 1094, Hungary]

The importance of freeze-drying and freeze concn., and of their combination for food preservation are briefly surveyed, covering: enrichment of the extract content and some important coffee components during freeze concn. - a critical survey of coffee var. as regards product quality and technological aspects; a comparative study and evaluation of the freeze-drying operation of freeze-concentrated coffee solutions of different concn., and production of instant 'expresso' coffee and 'coffee with creme' type coffee, using a combination of the 2 techniques; and a quality evaluation and comparative critical study of the main characteristics (aroma substances) of traditionally produced, freeze-dried and of freeze-concentrated-freeze-dried coffee. Changes in quality during 6 months storage were noted. [See FSTA (1980) 12 9G615.] AS

125

Green coffee. Olfactory and visual examination and determination of foreign matter and defects.

International Organization for Standardization

International Standard ISO:4149-1980, 2pp. (1980)

[En]

The methods described may be used to assess conformity with a specification or contract, to determine green coffee characteristics for various purposes and for quality control or inspection. AL

126

[Method for approximate calculation of heat conductivity coefficient of some foods.]

Latyshev, V. P.

Kholodil'naya Tekhnika No. 10, 38-41 (1979) [14 ref. Ru] [Vses. Nauchno-issled. Inst. Kholodil'noi Promyshlennosti, USSR]

The method was tested for coffee, potatoes, freeze-dried pork, milk and tvorog at temp. above freezing. Theoretical analysis shows that the heat conductivity coeff. can be approximately calculated from the composition using additive principles; the theoretical assumption was verified in practice. The calculated and experimental values were compared to show that the additive method relying on vol. ratios of components, considering their phases, gives reliable heat conductivity values for freeze-dried products (with 0.01-0.14 moisture) and for milk and tvorog (with 0.01-0.90 moisture). STI

127

ABC of coffee: coffee terms.

Anon.

Indian Coffee 43 (8) 244 (1979) [En]

Definitions for the following coffee terms are given: Arabica parchment, Arabica cherry, Anamallais, amber beans, adulterate, assessment (visual), aroma, acidity, acrid, astringent, after taste, 'A' cup grouping, 'A' grade of coffee. CFTRI

128

ABC of coffee: coffee terms.

Anon.

Indian Coffee 43 (9) 270 (1979) [En]

Definitions for the following coffee terms are given: 'AB' grade of coffee, 'AA' grade of coffee, bean, bits, black bean, bulk, blotchy appearance, boat shaped beans, browns, bulking, Brazil, Bababudan and Biligiri Hills, Bababudan, Biligiris. CFTRI

129

ABC of coffee: coffee terms.

Anon.

Indian Coffee 43 (10) 304 (1979) [En]

Definitions for the following coffee terms are given: 'B' cup grouping, 'B' grade of coffee, bitter, bland, burnt, brackish, baggy, body, channel washing, channel grading, cherry coffee, Chai beans, central grove, coated colour, chicory. CFTRI

130

ABC of coffee: coffee terms.

Anon.

Indian Coffee 44 (2/3) 28 (1980) [En]

Definitions for the following coffee terms are given: fruit, floats, flats, fermentation process, foxy bean, forlit, foreign matter, FAQ, french roast, full city roast, flavour, full, fruity, freeze dried coffee, fine, fair, falling off. CFTRI

131

Electric coffee or tea maker.

Fischer, K. (WIGO Gottlob Widmann & Söhne GmbH)

United States Patent 4 188 864 (1980) [En]

132

Automatic machine for the production of coffee from roasted coffee beans.

Grossi, L.

United States Patent 4 188 863 (1980) [En]

An automatic coffee-making machine comprises a grinder delivering ground coffee to a metering device, and a piston and cylinder arrangement delivering a measured quantity of hot water. HBr

133

Device for reconstituting used coffee grounds.

Valle, L. del

United States Patent 4 187 992 (1980) [En]

The device incorporates a cup for the coffee grounds, means for heating the cup, means for stirring the coffee grounds, valve means for controlling the flow of the coffee grounds from the bottom of the cup, means for grinding the coffee grounds, and a receptacle for receiving and storing the coffee grounds. HBr

134

Energy consumption and the potential for conservation in a spray-dried coffee plant.

Okada, M.; Rao, M. A.; Lima, J. E.; Torloni, M.

Journal of Food Science 45 (3) 685-688 (1980) [En]

[NYS Agric. Exp. Sta., Inst. of Food Sci., Geneva, New York 14456, USA]

Consumption of direct energy sources in a plant producing spray-dried coffee amounted to 12 930 kcal/kg of instant coffee (IC). Thermal energy sources accounted for 95% of the energy and electricity for the rest. Spray-drying was the most energy intensive operation, requiring 5040 kcal/kg IC. Thermal energy consumption (kcal/kg IC) for roasting, extraction, and concentration was 890, 2030, and 1780, resp. Thermal energy losses in the unit operations amounted to 55% of that consumed. Heat recovery and insulation techniques can be used to conserve about 70% of the losses. IFT

135

Pressurized fluid supply and control device, particularly for coffee-making machines.

Haddad, A. (Officine Cimbali Giuseppe SpA)

United States Patent 4 189 991 (1980) [En]

136

Packaging in a vacuum.

Guise, B.

Food Processing Industry 49 (580) 27, 31, 33, 37 (1980) [En]

The operation of vacuum packaging systems is described together with the latest developments in their applications. Aspects considered are: vacuumized preservation of primal beef joints; alternative method using Multivac B7; bulk cheese packaging; consumer prepacks; other uses of the rollstock vacuum forming machine; vacuum packaging of granular and small piece solids; and coffee packaging. VJG

137

Gas flushing for maximum product life.

Guise, B.

Food Processing Industry 48 (575) 57, 60-61 (1979) [En]

A description is given of the use of gas flushing to extend the product life of a specialized formula infant food and high protein dietary product (in metal cans at Cow & Gate Ltd., Wincanton, UK), potato powders and coffee (pillow packs or upright bags at Cadbury Typhoo Ltd.), and coffee bags (in pillow packs at R. Twining & Co. Ltd., Andover, UK). Consideration is given to packaging materials which can be used in association with gas flushing. VJG

138

Powdered coffee.

General Foods Ltd.

British Patent 1 563 230 (1980) [En]

A process is described in which a soluble coffee powder is obtained by the dehydration of an aqueous extract of roasted ground coffee. The process involves the recovery of selected volatiles to provide a product having a nutty green aroma. IFT

139

Coffee filter bags.
Wieland, C. P.

UK Patent Application 2 027 662A (1980) [En]

Filter bags for preparation of coffee are made from a natural or synthetic fibre filter paper which has been impregnated with a tasteless inert substance to retain aroma during storage. IFT

140

Coffee aroma improvement.
Societe des Produits Nestle SA

UK Patent Application 2 028 093A (1980) [En]

Capsules which are added to instant coffee to provide a strong burst of aroma upon dissolution in hot water, are prepared by coating particles of a stable emulsion of coffee oil and aromatic coffee distillate with a finely divided instant coffee. IFT

141

Coffee deacidification.
Societe des Produits Nestle SA

UK Patent Application 2 029 688A (1980) [En]

Coffee extracts are deacidified by contacting them with finely divided chitosan. IFT

142

Improved robusta coffee.
Anon.

Research Disclosure No. 167, 6 (1978) [En]

A process is described which enables blends of acceptable coffee to be made using larger proportions of, or entirely formed from, Robusta coffees (*Coffea canephora*) which are generally considered to have inferior flavour to the Arabica coffees. Roasted Robusta coffee beans which have been ground or otherwise comminuted are contacted with a solvent (either a low mol. wt. alcohol having 1-3 carbon atoms or a mixture comprising a major portion of acetone and a b.p. < 200°F) for about 1-20 min. A substantially non-decaffeinated Robusta coffee having improved aroma and flavour is produced by this process. Examples are presented involving the improvement of African Robusta coffee and of inferior or 'culled' coffee beans. JRR

143

Coffee base decaffeination process.
Anon.

Research Disclosure No. 167, 73-74 (1978) [En]

A process is described which employs benzyl alcohol as a decaffeinating solvent for use with solid or liquid coffee extracts, or with coffee beans. This solvent is desirable in that it has a high solubility for caffeine, and a relatively low solubility for flavour substances. Optionally, the benzyl alcohol can be thinned with one of a var. of miscible organic materials (preferably cyclopentane and cyclohexane) in order to speed up the penetration of the solvent, and facilitate the separation of the extractive from liquid bases. In general the conditions for the decaffeination process are pressures

of 1-5 atm, temp. of 20-125°C (preferably 40-60°C) and a contact time which varies, according to the factors selected for the process, between limits of 0.5-24 h. 3 examples of the process are described in detail. JRR

144

[Rapid UV spectrophotometric determination of caffeine in coffee infusions.] UV-photometrische Schnellbestimmung von Koffein in Kaffeeaufgüssen. Thomczyk, C.

Lebensmittel-Industrie 26 (12) 561-563 (1979) [12 ref. De, en, ru, fr] [Bezirkshygiene-Inspektion & -Inst. Suhl/Gotha, German Democratic Republic]

Comparative studies were conducted on 2 methods for detn. of caffeine in coffee infusions: (i) the method of Prange & Walther, in which caffeine is determined directly in a chloroform extract of coffee, by UV spectrophotometry at 273 nm; and (ii) a method based on adjustment of the coffee infusion to alkalinity, extraction of interfering substances by absorption on miramid or polyamide, and detn. of caffeine in the resulting aqueous phase by UV spectrophotometry at 273 nm. Accuracy of (i) and (ii) was similar; (ii) is recommended, because of its lower time and reagent requirements. Recovery is 96.6%. IN

145

Coffee, tea and VPB.

Prineas, R. J.; Jacobs, D. R., Jr.; Crow, R. S.; Blackburn, H.

Journal of Chronic Diseases 33 (2) 67-72 (1980) [21 ref. En] [Lab. of Physiol. Hygiene, Univ. of Minnesota, Minneapolis, Minnesota 55455, USA]

The possible relation between consumption of tea or coffee and incidence of ventricular premature beats (VPB) was studied in a survey on a total of 7311 men aged 35-57 yr and free of any history of heart disease or diabetes. Other factors considered included nightly duration of sleep, smoking, weekly alcohol consumption and age. The results show a significant correlation between amount of tea or coffee consumed and the incidence of VPB. No correlation of tea or coffee consumption with the frequency of VPB within a 2-min test period among men showing VPB was observed. Incidence of VPB was also related to age (increasing from 2.3% in men aged 30-39 yr to 6.6% in men aged 55-57 yr), but was not significantly related to the other variables studied. It is suggested that a fairly high tea or coffee consumption (> 9 cups/day) is necessary to cause or significantly increase the occurrence of VPB. AJDW

146

Spray-dried food product.

Pyves, R. R.; Jeffery, W. J. (General Foods Ltd.)
UK Patent Application 2 025 245A (1980) [En]

A method for drying and agglomerating food products in a single processing step involves the use of a 2-fluid nozzle for mixing an inert gas (N₂ or CO₂) with the product and varying the differential pressures, and subsequent atomization and partial gas removal in a conventional spray nozzle accompanied by fusion of product droplets. The invention is illustrated on an example of coffee extract. FL

147

Gas-flush packaging line.

Anon.

Food Engineering International 4 (11) 39 (1979) [En]

A description is given of a gas-flush packaging line, for packaging O₂ sensitive products, e.g. dried milk, baby food, coffee, liquid egg and butter oil, recently introduced by Terlet, Zutphen, Netherlands. The fully automatic vacuumizing and gas-flush packaging line evacuates O₂ from the container, replacing it with an inert gas, e.g. N₂, and can handle a variety of container sizes without lengthy changeover times. The line eliminates turbulence, has no dead space under the vacuum chamber for accumulation of powders and has special guiding channels. Control devices are provided for each step of the process. SP

148

[Method for agglomerating powdered mixtures.]

Verfahren zur Agglomeration pulverförmiger Stoffmischungen.

Niediek, E.-A.; Schönert, K.

German Federal Republic Patent Application

2 836 565 (1980) [De]

A finely powdered amorphous sugar, particularly lactose, is used as an agglomerating agent for instant products, e.g. instant coffee or "instant sugar", which are granulated by moistening and drying. W&Co

149

[Effect of packaging and storage conditions on quality of soluble caffeine-containing beverages.]

Lomachinskii, V. A.; Bol'shakova, T. I.

Konservnaya i Ovoshchesushil'naya Promyshlennost'

No. 11, 19-21 (1979) [Ru] [Vses. Nauchno-proizvodstvennoe Ob'edinenie Konservnoi Promyshlennosti i Spetsial'noi Pishchevoi Tekh., USSR]

The experiments were carried out with a beverage powder (Novost') consisting of 40% barley, 15% rye, 35% chicory, and 10% Robusta coffee (2nd grade). 100 g samples of powder were packaged in polyethylene/Cellophane (PC-2), polyethylene/Al foil/Cellophane (PFC) or in tin cans, and stored at 3-5° or 18-20°C for 3, 6 and 9 months. Periodical detn. of moisture, pH, acidity, caffeine content and solubility in cold and hot water showed that the quality of the product packaged in PC-2 packs declined significantly after 3 months storage, whereas that in the PFC packs did not change significantly even after 9 months. The best results were obtained with cans. The higher storage temp. predictably gave poor results. STI

150

Coffee pulp. Composition, technology, and utilization.

Braham, J. E.; Bressani, R. (Editors)

*International Development Research Centre**Monographs* IDRC-108e, 94pp. (1979) [many ref. En]

[Int. Development Res. Cent., Box 8500, Ottawa, Canada K1G 3H9]

This monograph contains chapters by individual authors on: the by-products of coffee berries; chemical

composition of coffee berry by-products; potential uses of coffee berry by-products; use of pulp in ruminant feeding; coffee pulp in swine feeding; coffee pulp - other species; coffee-pulp silage; drying of coffee pulp; processing of coffee pulp; chemical treatments; antipathological factors in coffee pulp. Potential food uses include protein extraction and use as a growth medium for single cell protein. RM

151

Coffee infusion product.

Edelfettwerk Werner Schlüter GmbH & Co.

British Patent 1 564 094 (1980) [En]

A coffee mixture of roast coffee and instant coffee is prepared for use in infusion bags by grinding or pulverizing fully soluble instant and roast coffee together. IFT

152

Chlorogenic acid extraction.

Anon.

Research Disclosure No. 170, 51 (1978) [En]

A method for the selective removal of chlorogenic acids from green coffee beans is described, which uses an anion exchanger consisting of an inert matrix to which is bound quaternary and/or tertiary and/or secondary amine groups, e.g. Dowex 44, Amberlite IRA 410, IRA 47, Dowex 11. In the preferred form, the anion exchanger is charged with anions which will not introduce foreign material into the finished beans, e.g. hydroxyl, carbonate or bicarbonate ions. The beans are extracted with water, preferably at an elevated temp., e.g. 60-80°C, and the chlorogenic acids are removed from the extract with the exchange resin. JRR

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14. Viscosity of Foods	□ £11.00	□ £5.50	□ £8.50
15. Taste Panels in Food Science	□ £12.00	□ £7.00	□ £11.00
16. Taints in Food	□ £10.00	□ £5.50	□ £9.00
17. Microbial Toxins in Food	□ £12.00	□ £7.00	□ £11.00
18. Smoked Food Products	□ £10.00	□ £5.00	□ £8.00
19. Disposal of Waste Food Products	□ £14.50	□ £7.50	□ £12.00
20. Use of Glucose in Food Products	□ £9.50	□ £4.50	□ £8.00
21. Emulsifiers in Foods	□ £11.00	□ £6.00	□ £9.50
22. Stabilizers in Foods	□ £11.00	□ £6.00	□ £9.50
23. Staling and Antistaling Additives	□ £9.50	□ £4.50	□ £8.00
24. Catering Industry	□ £9.50	□ £5.50	□ £8.50
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26. Nitrosamines	□ £9.50	□ £4.50	□ £8.00
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30. Sulphur Dioxide in Food Products	□ £10.00	□ £5.00	□ £8.00
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33. Browning of Foods	□ £10.00	□ £5.00	□ £8.00
34. Aflatoxins	□ £10.00	□ £6.00	□ £9.50
35. Antibiotic Properties and Residues in Food excluding Nisin	□ £9.00	□ £4.50	□ £7.50
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41. Ascorbic Acid	□ £9.00	□ £5.50	□ £9.00
42. Thickeners and Gelling Agents	□ £8.50	□ £5.00	□ £8.00
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